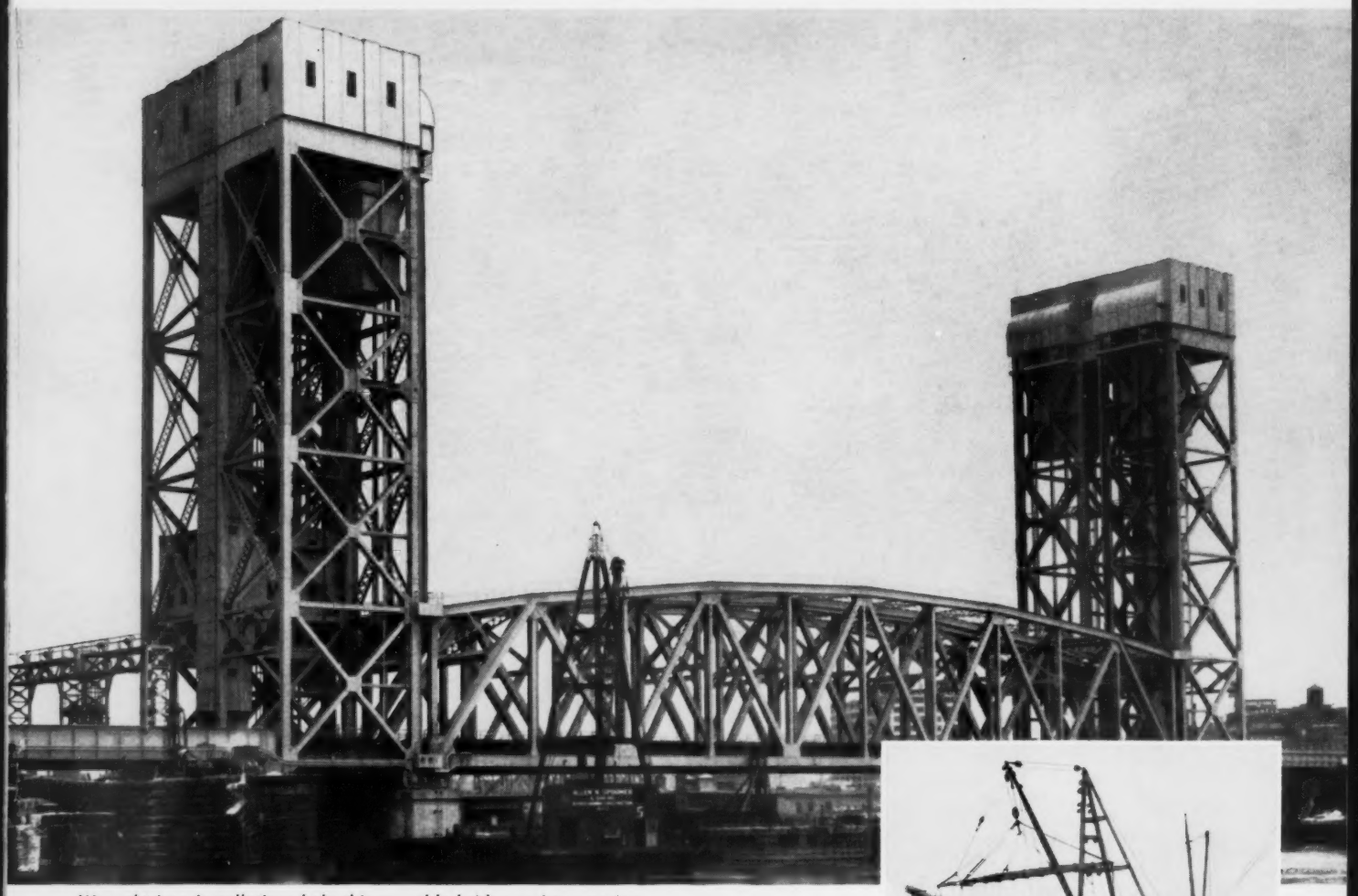
Short Lines
Roll Up Their Sleeves—p. 9

Why Program Maintenance of Way? . . . p. 30

RAILWAY AGE

MAY 6, 1957 • THE INDUSTRY'S NEWSWEEKLY



Wrought iron installations help this movable bridge resist corrosion.

Installed in 1930, wrought iron conduit still carries high tension power lines under New York Central's Harlem River Bridge.

Excellent service record recommends Wrought Iron Pipe again for New York Central's Harlem River Bridge

The New York Central Railroad, familiar with wrought iron's savings in one of their earlier installations, chose this material again for railings, drains and conduit on the Harlem River lift bridge. Hardesty and Hanover, New York City, were the Consulting Engineers.

The earlier installation dates back to 1930 when the New York Central used wrought iron conduit to carry high tension power lines under the Harlem River. Despite all these years of exposure to corrosive salt water, maintenance crews still report: no repairs needed.

Our new booklet, *Wrought Iron for Railroads,* discusses a number of other applications where this metal can help your road trim costs. Write for a copy. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

BYERS Wrought Iron Tubular and Hot Rolled Products

Armco Pipe-Arch Structures

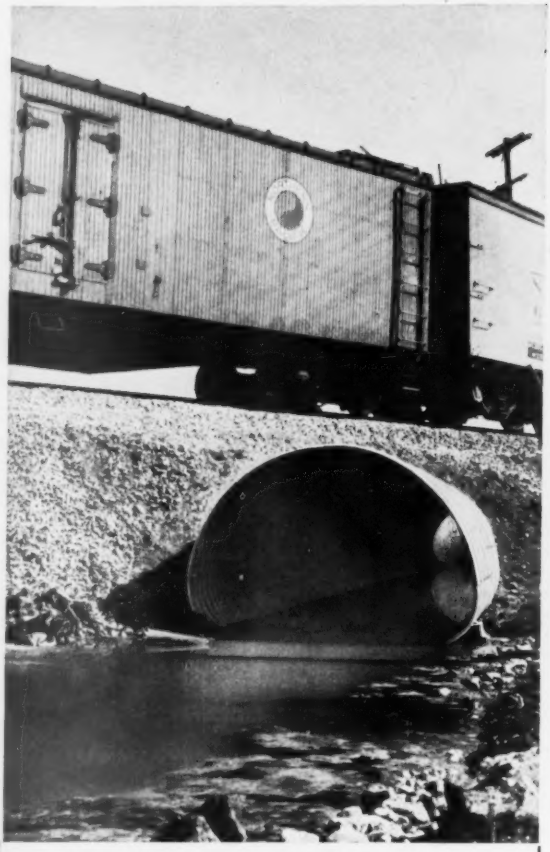
Solve Problems of Limited Headroom, Assure Safe Strength

Armco Pipe-Arch is made to order for limited headroom conditions. Under a shallow cover it provides the safe strength of corrugated metal design PLUS unrestricted waterway area to assure fast runoff.

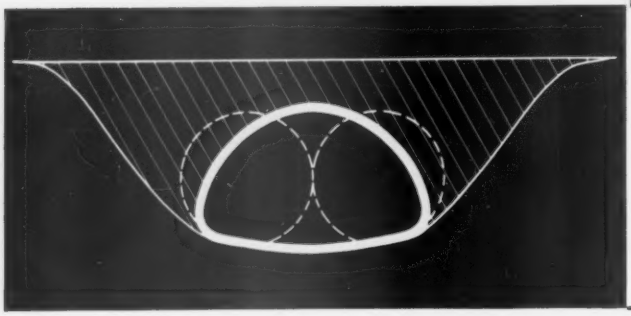
Shaped to "fit the ditch" with *extra area* in the bottom, Armco Pipe-Arch can save you time, trouble and money. For example, in many cases a single Pipe-Arch will do the work of two or more smaller openings. This means less installation time, less fill material, and less pipe to do the job.

Armco Pipe-Arches are a good long-term investment, too. They can always be extended, or fully salvaged and used in other locations.

Write us today for complete information about Armco Pipe-Arch and other drainage structures for railroad use. Armco Drainage & Metal Products, Inc., 4607 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.



Installing an Armco Pipe-Arch eliminated the need for a costly trestle or masonry bridge.



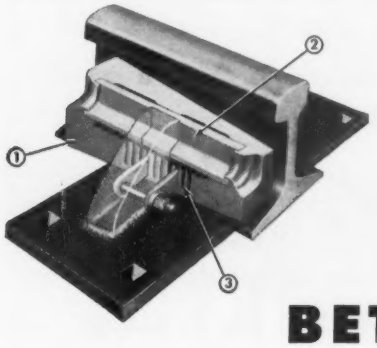
When one Armco Pipe-Arch can do the job of two full-round pipes, handling, hauling and installation costs are cut in half.

ARMCO CORRUGATED METAL DRAINAGE STRUCTURES

ARMCO®

How this brace can brace!

Rail keeps growing heavier, trains keep rolling faster. But no matter to Model 811 Rail Brace; it just puts its shoulder to the job, and budges not a smidgen. No thrust or impact ever knocks the 811 out of whack!



Sound design provides the reason. At the bottom of it all is a steel plate, roughly similar to a regular tie-plate. Welded to the plate is the forged bracing member. A specially shaped wedge (1), containing an angular spring-steel piece (2), fits snugly into place between rail web and brace. (The brace is machined, where it makes contact with the wedge, with a horizontal slope of 1 in 16, and a vertical slope of 1 in 8.)

When the wedge is driven sufficiently tight to compress the spring 1/32 in., the pawls attached to either side of the brace are turned down into the slots (3) milled into the wedge. This locks the whole assembly together, and makes it virtually integral with the running rail. That rail just has to stay put!

Adjustments can be very easily made, as needed. The only tool required for either installation or adjustment of the 811 is a spike maul or a hammer.

A Bethlehem engineer will be glad to explain the Model 811 Rail Brace in full detail. You can reach him through any Bethlehem sales office.

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On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

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The Kershaw Jack-All

Compare these features of the Kershaw Jack-All with other machines:

- ★ Tried and proven by four years actual service on railroads.
- ★ No spotting problems. You spot for the jack and the tamping feet automatically are pre-set to tamp adjacent ties.
- ★ Tamps two ties at the same time.
- ★ The Kershaw Jack-All is equipped with a dial indicator-type or pendulum cross-level sighting device.
- ★ Dogs automatically compensate for varying rail heights and the Kershaw Jack-All is on the track at all times.
- ★ One man operated. Self-propelled.

Before You Buy!

Try before you buy . . . Why invest thousands of dollars in a trackwork machine before you KNOW that it will do the job your operations demand?

Kershaw Manufacturing Company will be happy to arrange a test demonstration of the Kershaw Jack-All, or any Kershaw machine, on your railroad, operating under your conditions. There's no obligation. Then you will know that the machine can do the job you want done before you buy it.

Now . . . more than ever . . .

Recognize This Symbol of Leadership . . .

KERSHAW
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RAILWAY AGE The Industry's Newsweekly

Vol. 142, No. 18
May 6, 1957

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PAID CIRCULATION THIS ISSUE ...14,693

CONTENTS and
Week at a Glance

Short lines gird for tomorrow p.9

Rolling up their sleeves, they show alertness to progressive railroading techniques. Here's a sampling of short line leaders' own views on the short line picture today.

CPR is confident about the future p.11

This attitude, says Norris R. Crump, the road's president, is the result of methodical study of economic developments in Canada and preparations the CPR has made to adapt its operations to the changing scene.

'Firm' M/W programing vs. cutbacks p.30

There's a growing school of thought among management officers to the effect that "firm" annual programing of maintenance work is more economical in the long run than the "stop and go" variety.

How's the Long Island doing? p.33

The railroad, long-time butt of would-be humorists, is moving cautiously into a new era. Out of bankruptcy and operating in the black, with revenues slowly increasing and the physical plant in the best shape ever, the LI still moves, however, on thin, if hardening ice.

Journal stops cut hot box rate p.34

R-S journal stops and roll-type waste packing on 1,650 Frisco freight cars have given 21,700 months of service without a hot box on home rails. By the end of 1957, about 20% of the road's car fleet will be equipped with journal stops.

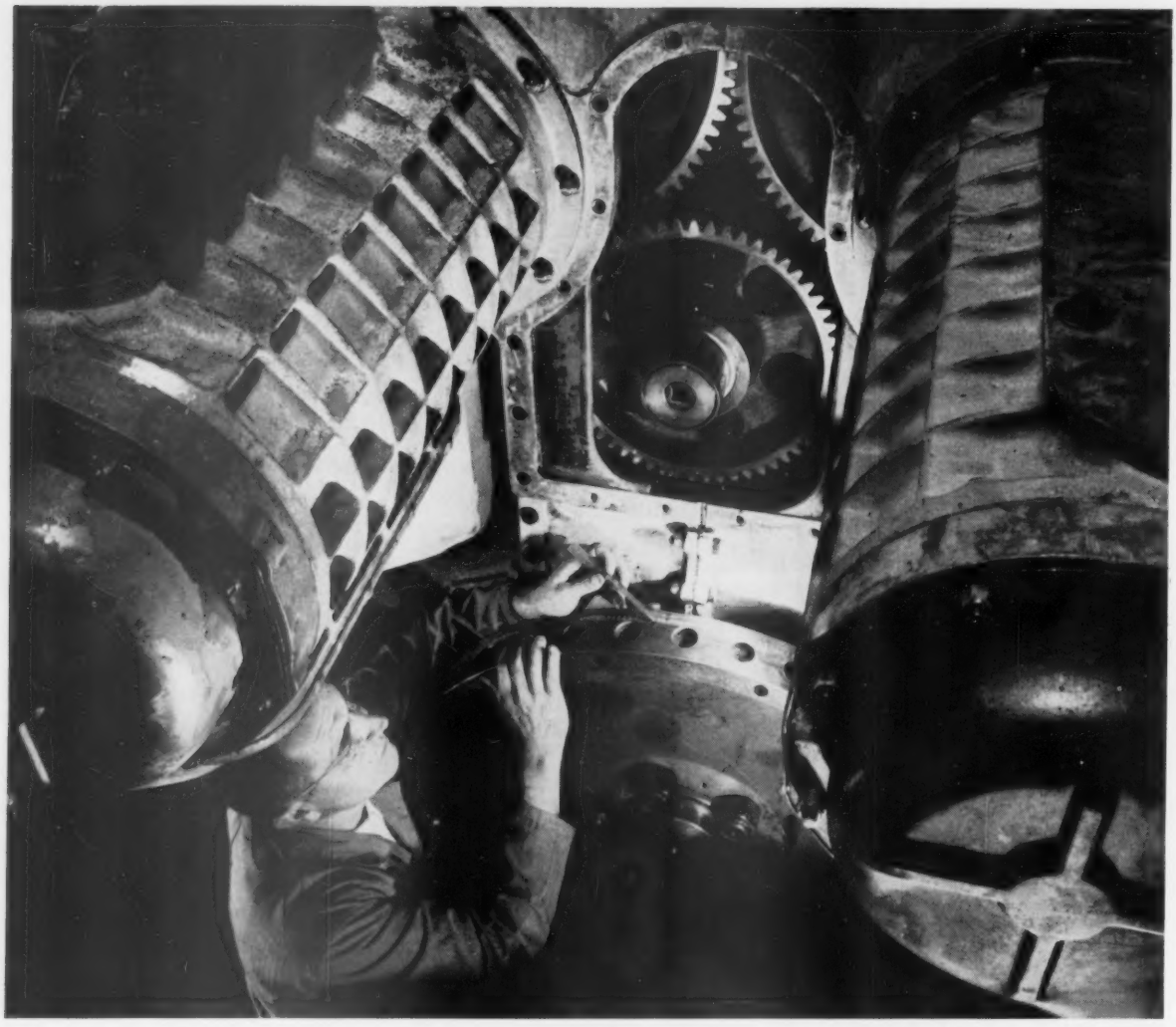
Winning essays in Joseph T. Small contest p.36

Creation of a freight-car pool and modification of current per diem arrangements will increase the car supply. Railroads and car builders can improve net earning power of freight equipment by use of single-sheathed, all-steel box cars.

ENGINEER'S FIELD REPORT

PRODUCT RPM DELO OIL RR

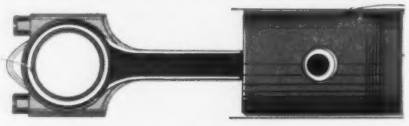
FIRM NORTHERN PACIFIC RAILWAY
South Tacoma, Wash.



RR diesel gears show only ½° wear in 2½ million miles

Timing gears on this Northern Pacific GMC-diesel locomotive engine, lubricated with RPM DELO Oil RR, recently completed 2½ million miles of severe freight service without repairs or adjustment. NP's South Tacoma Shop Foreman, A. R. Genin (above), indicates degree marks on engine flywheel, used to gauge gear wear. Tolerance between gear teeth shows variance of just ½° from original setting. Mr. Genin says, "We consider this low rate of wear remarkable for heavy-duty freight operation. It is typical of our experience during the 12 years we have used RPM DELO Oil in all our locomotive diesels." Engines are 1350 h.p. 16-567 series.

Why RPM DELO Oil RR reduces wear, corrosion



• Oil stays on engine parts—hot or cold, running or idle • Anti-oxidant resists lacquer formation • Detergent keeps parts clean • Special compounds prevent corrosion of bearing metals • Inhibitor resists foaming.

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STANDARD OIL COMPANY OF TEXAS, El Paso

THE CALIFORNIA COMPANY, Denver 1, Colorado

Current Statistics

Operating revenues, two months	
1957	$1,671,027,680
1956	1,646,576,830
Operating expenses, two months	
1957	$1,331,918,282
1956	1,303,060,291
Taxes, two months	
1957	$171,149,268
1956	169,385,229
Net railway operating income, two months	
1957	$124,000,444
1956	129,924,058
Net income estimated, two months	
1957	$91,000,000
1956	95,000,000
Average price 20 railroad stocks	
April 30, 1957	91.49
May 1, 1956	109.24
Carloadings revenue freight	
Sixteen weeks, 1957	10,632,481
Sixteen weeks, 1956	11,171,071
Average daily freight car surplus	
Wk. ended Apr. 27, 1957	10 799
Wk. ended Apr. 28, 1956	5,567
Average daily freight car shortage	
Wk. ended Apr. 27, 1957	907
Wk. ended Apr. 28, 1956	6,405
Freight cars on order	
March 1, 1957	111,965
March 1, 1956	141,437
Freight cars delivered	
Two months, 1957	15,477
Two months, 1956	9,080
Average number railroad employees	
Mid-March 1957	987,975
Mid-March 1956	1,041,214

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Week at a Glance CONTINUED

These are the respective conclusions of the two $1,000 prize winners in the recent contest administered by Railway Age.

When is a car effectively 'utilized'? p.52

Paradoxical though it seems, it is entirely possible, from the profit standpoint, that a car may be better "utilized" when it moves 50% empty, than if 100% loaded movement is insisted upon.

SHORT AND SIGNIFICANT

Freight car purchase plan(s) . . .

There's no doubt that railroad leaders are actively discussing proposals for increased freight car ownership. The question seems to be which of several plans stand the best chance of adoption. Maybe more than one of them could operate simultaneously—because, the way we get it, 100% participation in a given plan would not be necessary for its success.

New Santa Fe president . . .

is Ernest S. Marsh, financial vice-president of the railroad since 1948. He was elected last week to succeed Fred C. Gurley, who has been elected chairman and chief executive officer. Mr. Gurley had been president since August 1944.

Interim mail-pay increases . . .

averaging 24.64% are sought by Eastern railroads in a motion filed with the ICC. The interim raise would be part of the 63.8% advance which the Eastern lines are seeking on a permanent basis.

'Piggyback' in Panama . . .

began recently, when the government railroad crossing the isthmus moved its first trailer-load of merchandise in this service to develop loading and unloading techniques and cost data.

'Profit illusion' . . .

is created by capacity operation of commuter services in rush hours, says W. D. D. Prince, the Reading's PTM. The trouble is that hardly anybody sees the idle equipment and idle crews eating into revenues the rest of the day.

A-B-C of Railroad Communications

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RAILWAY AGE
The Industry's Newsweekly

Short Lines Gird for Tomorrow

They're united behind trunk lines on "three shall nots" but tactics in attacking common problems reflect individualistic natures

When James M. Hood, president of the 283-member American Short Line Railroad Association, appeared before a Congressional committee weighing the merits of various transport bills at Washington last month, he pinpointed two characteristics that seem common to short line railroaders.

- First, they're an independent, strong-minded breed with strong convictions.
- Second, they believe in an unalterable right to compete.

Mr. Hood, outlining ASLRA views on the various bills, withheld an absolute endorsement of H.R. 3233, which would prevent post-facto litigation by the government in connection with Section 22 rates. Referring to a portion of the bill which would confine the government-traffic provisions of Section 22 to periods of war or emergency, Mr. Hood stated "there is a substantial difference of opinion among the membership as to the desirability of this change."

The Short Lines "urge," Mr. Hood continued, passage of the bill if this clause is eliminated but "take no position" if it is included in the bill.

Turning to the bills stemming from the Cabinet Report and comprising the "three shall nots," Mr. Hood said: "The short line railroads are in accord with more leeway being accorded the various forms of transportation in their competition for freight traffic."

In taking a random sample of short line opinion on the issues confronting them today, Railway Age found them unanimous on this latter point.

"In order to survive," said President L. D. Curtis of the Atlantic & Danville, "we must have opportunity to meet competition as we find it and must have a wider scope in exercising our judgment and initiative by the elimination of some of the present restraints and regulations. We must have enabling legislation at both the state and federal level to free us from bondage."

H. H. Simms, president of the Atlanta & St. Saint Andrews Bay, said that the "three shall nots" are "practically a must for the railroad segment of the transportation industry." He warned that without their passage the railroads would be placed "at the mercy of their competitors through the generosity of the Interstate Commerce Commission."

Mr. Simms derided charges that the proposals would revive "laws of the jungle" as "just a catch phrase and a lot of bunk." He also denied that the "shall nots" would jeopardize the common carrier truckers, many of whom "would gladly scuttle the railroad industry."

Independent observations on the subject came from **O. B. Keister, Jr.,** president of the Tennessee, Alabama & Georgia. He approved of the purposes of the Cabinet Report bills but cautioned that they would be spoiled by greedy railroads.

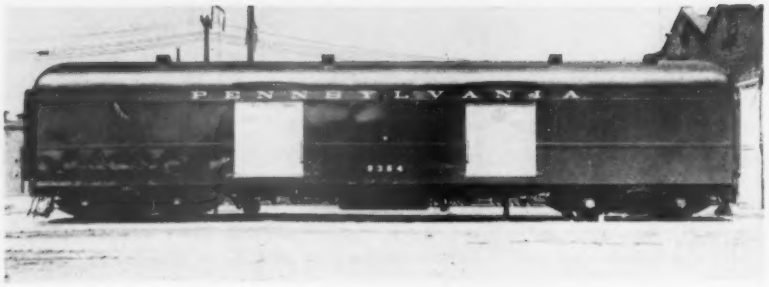
Mr. Keister said he feared some roads would "use the 'three shall nots' as a basis to eliminate their competition" and would "cause chaos in the transportation industry."

"Some selfish railroads today," he said, "that are appealing to the public at large to allow them the right to compete better with other modes of transportation are, on the other hand, attempting to eliminate, through tariff restrictions, the competition offered by some of the smaller railroads. The fact that these individual railroads are not willing to compete with other carriers for the movement of rail traffic clearly shows that their attitude is not one of 'letting competition work'."

"Short lines generally constitute three types," it was pointed out by L. T. Wright, president, Midland Continental. He defined these as be-

C&O Stockholders' Meeting Sets Company Record

A record turnout of over 3,000 Chesapeake & Ohio stockholders (above) featured the road's April 25 annual meeting, held for the first time at the road's Newport News, Va., port. A cruise of the 1½-mile C&O facilities on the waterfront aboard two vessels, and dedication of $12,000,000 in new facilities, followed the meeting. Shareholders were treated to a luncheon prepared by chefs of the Greenbrier, C&O's resort at White Sulphur Springs, W. Va., which was shipped to Newport News aboard refrigerated trucks and served during the harbor inspection cruise.



Aluminum Halves Baggage Car Door Weight

Two Pennsylvania baggage cars have been outfitted with aluminum doors, like those above, for extensive trial runs. Eight doors were fabricated by Aluminum Company of America's New Kensington, Pa., jobbing division. Weight reduction of 166 lb eases door movement. The doors, suspended from roller-mounted aluminum hangers, slide along track in car floor.

ing those "owned and operated for the exclusive benefit of a product such as lumbering; a short line for switching purposes; and a short line that engages in common carrier business."

Common to all of them are the problems common to all railroads: Making the maximum use of their equipment; finding the money to maintain their properties; keeping afloat on the steepening waves of costs and wages; countering the inroads from competitors; developing new efficiencies to insure adequate returns without raising rates too high; and keeping pace with the new technologies of today.

Cost-cutting steps are not viewed as the whole answer by such an organization as that which operates the Fort Dodge, Des Moines & Southern and the Wellsville, Addison & Galeton.

Directed out of New York City, along with several other properties, by a management team led by M. M. Salzberg, president, these roads campaign energetically to build up the traffic they can originate on their own lines. Working alone or with connecting trunk line carriers, they eagerly solicit various industries to locate producing plants on their lines or to expand existing facilities.

It's their conviction that a railroad cannot or should not rely too heavily on just one industry, or just one main producing plant, to carry its freight operations and so they emphasize in their dealings with prospective developers the trend in industry to diversification and decentralization.

In their campaigns they stress the one thing they feel is a short line's biggest selling feature: its opportunity to provide service on a sort of personal, closely integrated basis closely geared to the manufacturing schedules and needs of its customer.

Mr. Wright of the Midland Continental voices similar feelings, saying his road can promise "personalized service because we can do it." He says that where a trunk line carrier may be able to provide switching service for a customer only once or twice a day, his road will switch several times a day.

The Roscoe, Snyder & Pacific is a bridge carrier much as other short lines frequently are, but, E. G. Stafford, Jr., vice-president and assistant general manager, says, there's little industry located on its lines.

"Every point of any consequence served by us is competitive with our trunk line connections. Therefore, our problem is primarily a selling proposition. Our very existence depends on our selling three railroads: the RS&P and our two trunk line connections."

Selling little more than service, the RS&P emphasizes just that and includes such features in its traffic work as wire passings and automatic notifications of defective cars.

There's a considerable spread of opinion as to the advantages of a short line using substitute truck service, and only the TA&G endorsed piggyback as having any advantages for anything but trunklines.

Tennessee, Alabama & Georgia was the first road in the southeast to go into trailer-on-flat-car services and, despite its scant 96-mile length, grossed $21,000 from the service last year.

"Serious consideration," Mr. Keister reported, "is now being given to the possibility of expanding this service in connection with other railroads and also with truck lines whose certificates terminate at the termini of our railroad."

This road has eased its difficulties in holding top-rank personnel through an incentive plan which amounts to a profit-sharing arrangement to offset the limitations to advancement on a small-staff short line.

Some short line executives report that the challenge of holding a job which cuts across all management lines appeals to some railroad people, and for this reason suitable personnel can usually be hired. The RS&P tries to fill the bulk of its employment rolls from communities on line and believes in promoting officers from the ranks. It also frees off-line employees from as much paper work as possible and avoids periodic transfers, preferring "to let them grow roots." But, the A&D's Mr. Curtis notes that with retirement of older officers "we will be hard pressed to replace them with men of equal ability since most trunk lines have raised salaries and provide retirement benefits that we cannot presently meet."

The short line future is something that short line spokesmen seem confident of. They can see little chance (or use) of their own roads being absorbed into larger carriers, although several would concede there are cases where mergers would be advantageous.

Mobilization of track forces and use of the latest in mechanical tools for repairs are unanimously viewed as good investments for the short line road.

Mr. Simms notes in this regard that "the former practice of trunk lines disposing of their discarded or outmoded equipment to short lines for their continued use is a practice that is as outmoded as a mule and a quarter yard scoop for moving dirt. A short line must necessarily adopt every measure possible to reduce its operating costs by using the most modern and efficient equipment, both on and off track."

"The future of the short line that is making money," the MC's Mr. Wright stated, "will best be served by maintaining its individuality in connection with interchange of business with neighboring connections. If a short line is not making money, though, there is usually nothing ahead but abandonment."

'Q' Gets 17½% Increase In Chicago Commuter Fares

A 17½% increase in Chicago-area commuter fares charged by the Burlington has been authorized by the Illinois Commerce Commission.

Burlington spokesmen estimated that the increased fares would cut the service's operating loss from $540,000 to $240,000 yearly.

CPR Is Confident About the Future

Diversification and research enable the road to adapt its operations to the changing scene, President Crump tells the Newcomen Society

Canadian Pacific management is highly confident about the railroad's future prosperity and growth. This attitude is based not only on ingrained optimism, but is the result of methodical study of economic developments in Canada and preparations the CPR has made to adapt its operations to the changing scene, said CPR President Norris R. Crump in an April 25 Newcomen Society address at New York. He said, in part:

"During the past 18 months, a group of eminent economists—American and Canadian—have collaborated with officers of Canadian Pacific in a study of the nature and extent of probable Canadian growth over the next 15 years.

"We expect a gross national product 80% greater than in 1955, a population nearly 35% larger than in 1955, manufacturing output 90% above the 1955 figure, and mineral production three times the current level. Buoyant world markets, especially for products of the resource industries and for semi-finished goods, are forecast, with exports of wood and paper products rising by about 50% and exports of primary nonferrous metals by a spectacular 275%. Large quantities of high-grade iron ore and untold deposits of lower-grade ore suggest an eightfold increase in output between the mid-nineteen-fifties and 1970.

"Resource-based production may be expected to continue as the traditional stimulant to the growth of manufacturing and expansion of the service industries. Agricultural output may be expected to increase substantially, and population growth together with petroleum and natural gas developments may be expected to lessen the vulnerability of the Prairie economy to the chill winds of agricultural protectionism abroad.

"Today, as in 1881 when Canadian Pacific was granted its charter of incorporation, the North American continent is in the midst of a transportation revolution. Today, as in the past, there are skeptics and Cassandras in our midst who cry havoc, and despair of the railway industry's ability to meet the challenge of the times. Today, as in the past, there is no place for such despondent prophets of gloom in the Canadian Pacific enterprise.

"Today, Canadian Pacific, by land, sea, and air, has become a world-wide transportation system with a proud record of three-quarters of a century of progress. Its rail enterprise embraces operations of almost 22,000 miles of track, of which some 17,000 miles are in Canadian territory and some 4,700 miles are in the United States. The current gross investment stands at some two billion dollars. To meet the demands of Canada's surging economic growth and to keep pace with competition in an area of unparalleled technological advance, further capital investment of the order of $100 million annually— another $1,500 million over a 15-year period —is contemplated.

"The purpose of the Canadian Pacific over the last three-quarters of a century, as it is today, has been to create, maintain, and expand—not only a nationwide railway operation —but an integrated transportation system serving Canada and the world —by land, sea, and air.

"When the *Empress of England* goes into service this spring, Canadian Pacific's ocean fleet will consist of four passenger cargo liners and seven cargo vessels. We are alert to the challenge and the opportunities of change in maritime transportation, as reflected in the construction of the St. Lawrence Seaway—including devising vessels adaptable to both ocean and Great Lakes operations.

"Canadian Pacific Airlines formed in 1942 with the amalgamation of ten independently operated 'bush lines,' is now the world's sixth ranking airline in terms of unduplicated route mileage. The Polar route of Canadian Pacific Airlines has been described as the first new travel route in a thousand years. It is in reality an overland route, with less than six hundred miles of open water. Furthermore, Canadian Pacific airliners flying this route are never more than *ninety minutes* from a landing field. Weather conditions in the Arctic are excellent for flying.

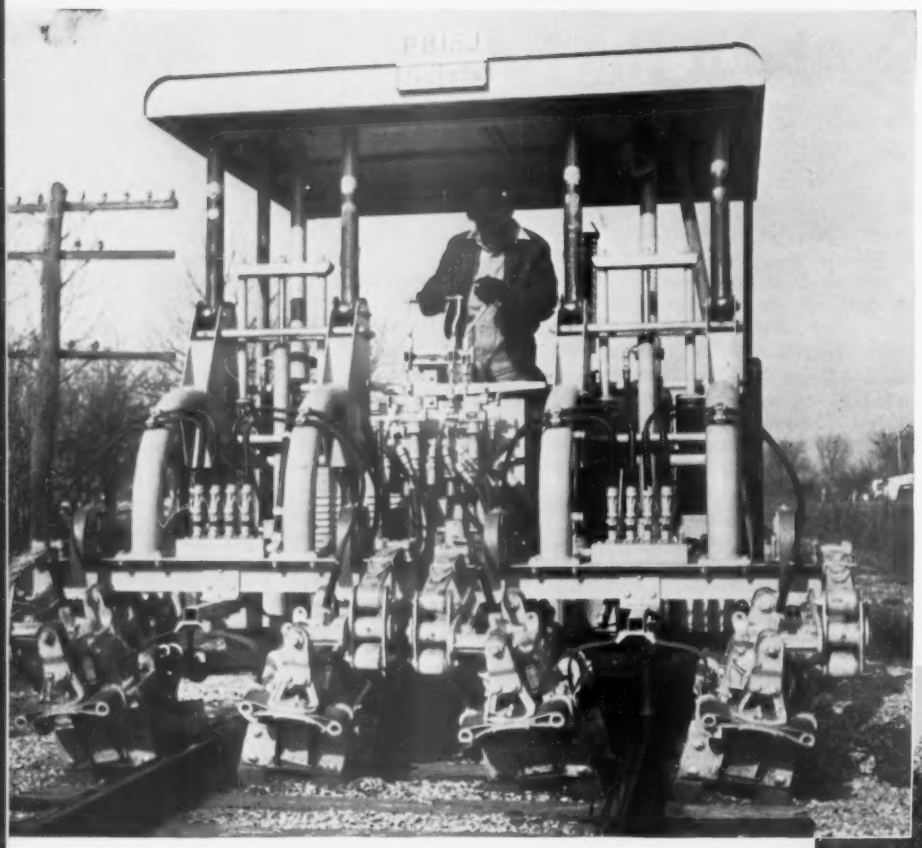
"The global geography of international civil aviation makes it necessary to discard the traditional picture of ocean ports as the only 'gateways' to the North American continent, and to accept the fact that the 'gateway' ports of air transport are destined to be the cities that are the most strategically situated at points on a straight line between the most populous or most rapidly developing areas of the earth's surface.

"It is the responsibility of manage-

(Continued on page 14)

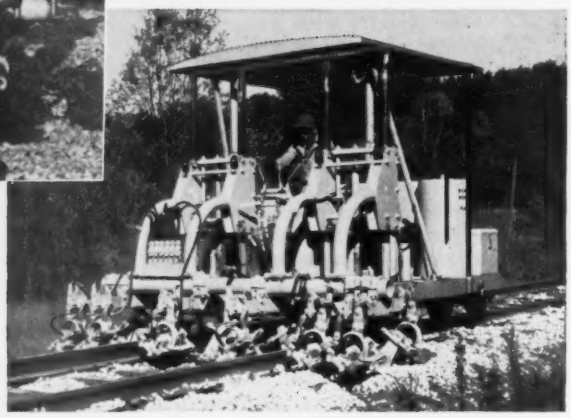
B&O Celebrates 20 Years of Stewardesses

Eight members of the Baltimore & Ohio's stewardess-nurse service gather around a cake commemorating the 20th anniversary of the service's establishment. They are aboard a dining car of the "Capitol Limited" in Chicago's Grand Central Station. Another party was held in St. Louis.



THE JACKSON TRACK MAINTAINER — unmatched for both putting up and maintaining track of finest quality in an unlimited range of conditions.

THE NEW JACKSON MULTIPLE, relatively inexpensive on-track tamper that's unrivalled for low cost and uniformly fine tamping in all operations involving medium to high lifts or any lift equal to, or greater than largest ballast used.



JACKSON MANUALLY GUIDED TIE TAMPERS. These machines and the power plants from which they are operated, are exceedingly efficient, widely used by small gangs in low lifts and smoothing work, cross-overs and spots the on-track machines can not reach.

From the shops of

JACKSON

tamping SPECIALISTS, comes the best answer to EVERY TAMPING REQUIREMENT!

The very high regard in which Jackson Tampers are universally held is the result of our many years of specialization in the manufacture of this type of equipment . . . over 35 years of continuous and intensive study of the tamping needs of railways throughout the nation and the devotion of all our energies to the production of tampers which do the job better, faster and more economically. Isn't it logical that the best answer to YOUR tamping requirements should be found here? It sure is, and we're confident we can prove it to your entire satisfaction! We'll welcome the opportunity of conferring with you on any tamping problem.

JACKSON VIBRATORS, INC. • LUDINGTON, MICHIGAN

MARKET OUTLOOK THIS WEEK

Carloadings Up 0.6% in Week

Loadings of revenue freight in the week ended April 27 totaled 690,789 cars, the Association of American Railroads announced on May 2. This was an increase of 3,839 cars, or 0.6%, compared with the previous week; a decrease of 89,188 cars, or 11.4%, compared with the corresponding week last year; and a decrease of 35,111 cars, or 4.8%, compared with the equivalent 1955 week.

Loadings of revenue freight for the week ended April 20 totaled 686,950 cars; the summary, compiled by the Car Service Division, AAR, follows:

REVENUE FREIGHT CAR LOADINGS

For the week ended Saturday, April 20

District	1957	1956	1955
Eastern	110,402	126,903	121,915
Allegheny	134,787	153,577	140,986
Pocahontas	64,446	61,104	59,048
Southern	124,714	134,124	107,919
Northwestern	91,454	108,824	100,828
Central Western	110,908	119,815	113,557
Southwestern	50,239	59,090	57,179
Total Western Districts	252,601	287,729	271,564
Total All Roads	686,950	763,437	701,432
Commodities:			
Grain and grain products	48,379	50,336	45,741
Livestock	5,839	7,437	8,867
Coal	139,960	137,267	113,840
Coke	11,691	12,868	11,315
Forest Products	39,632	46,085	41,762
Ore	41,498	59,685	48,924
Merchandise l.c.l.	55,737	61,031	60,795
Miscellaneous	344,214	388,728	370,188
April 20	686,950	763,437	701,432
April 13	673,964	742,053	670,304
April 6	644,092	685,378	659,217
March 30	694,922	724,968	654,761
March 23	685,833	697,248	634,628
Cumulative total, 16 weeks	10,632,481	11,171,481	10,347,663

IN CANADA.—Carloadings for the seven-day period ended April 14 totaled 68,838 cars, compared with 72,673 cars for the previous seven-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
April 14, 1957	68,838	33,971
April 14, 1956	79,142	35,570
Cumulative Totals:		
April 14, 1957	1,053,160	493,768
April 14, 1956	1,120,418	521,705

New Equipment

FREIGHT-TRAIN CARS

► *Repair Ratio Steady.*—With freight cars owned by Class I railroads totaling 1,720,304 on April 1, 1957, and with 70,220 cars awaiting repairs, the repair ratio stood at 4.1% on that date, same as on April 1, 1956.

	April 1, '57	April 1 '56	Change
Ownership	1,720,304	1,696,544	23,760 (i)
Waiting Repairs	70,220	69,570	650 (i)
Repair Ratio	4.1%	4.1%	.....

► *Southern.*—Ordered 2,650 freight cars at cost of $27,500,000; Pullman-Standard will build 1,200 70-ton gondola cars, 200 50-ton "premium-type" box cars and 600 70-ton covered hopper cars; ACF Industries, 500 70-ton hopper-bottom coal cars; Greenville Steel Car, 100 70-ton drop-end gondola cars; General American, 50 70-ton "Airslide" covered hopper cars.

LOCOMOTIVES

► *Diesel Repair List Up.*—There were almost 100 more diesel units in or awaiting shop repairs at the end of the first 1957 quarter than at the same date last year (974, compared with 879); total diesel fleet was up to 26,518 units and the steam fleet was down to 3,389 on April 1, 1957, says AAR report summarized below.

	Owned or Leased April 1		Stored Serviceable April 1		Waiting Shops April 1	
	1957	1956	1957	1956	1957	1956
Diesel (Units)	26,518	25,283	64	23	974	879
Steam (Locomotives)	3,389	5,360	848	835	562	984
Electric (Units)	607	632	15	12	73	76

SPECIAL

► *Northern Pacific.*—"Our 1957 budget of more than $30,000,000 for improvements and new equipment," says Robert S. Macfarlane, president, "is based on our expectation that business activity in the Northwest and in the nation will continue at a relatively high level."

New Facilities

► *Detroit, Toledo & Ironton.*—Completed strengthening of "short-cut" bridge at River Rouge, Mich., for operation of hot metal cars; contractor, American Bridge division of U.S. Steel; cost, $238,000.

► *Long Island.*—Ground is to be broken this month for new $670,000 passenger-car inspection shop in Jamaica, N.Y.; completion of project is expected early next year; shop will have six inspection pits, each capable of handling five 80-ft cars at once.

► *Pennsylvania.*—Ordered 18 sets of four indication type AR coded cab signal equipment from Union Switch & Signal division of WAB Co. for installation on M-U cars being built for the PRR for joint service with the Hudson & Manhattan.

(Continued from page 11)
ment, in a transportation enterprise of the stature of Canadian Pacific, to be in the vanguard of technological advance. It is no less imperative for Canadian Pacific management to concern itself with economic growth. We must be no less ready to foresee tomorrow's transportation needs and to seize the transportation opportunities that are necessary concomitants of Canada's surging economic growth.

"Railway enterprise in North America is hampered by two things in meeting the challenge of competition which characterizes the transportation revolution of today. The first is outmoded restrictive regulation—an anachronism under present-day conditions—which dates back to the time when railways provided the sole means of mass overland transportation.

"The second takes the form of restrictive provisions found in collective bargaining agreements which deprive railways of taking full advantage of the benefits of technological advance. It is Canadian Pacific's purpose to see that they are surmounted—just as in the eighteen-eighties the men who built Canadian Pacific overcame the formidable obstacles of finance and of geography which then blocked the path of Canada's progress.

"It is our purpose to avail ourselves of the best instruments of human knowledge, in the skills of management and of research, technological and economic, to assure the prosperity and well-being of railway transport."

Greater Civic Role Urged for Businessmen

A business executive who fails to participate in such activities, says J. M. Symes, PRR president, is not doing justice to either his community or the corporation paying his salary

Businessmen must take an increasingly active part in civic, social and political affairs of community, state and nation, says James M. Symes.

Mr. Symes, president of the Pennsylvania, addressed last week's annual William Penn Award dinner of the Chamber of Commerce of Greater Philadelphia. He was also the recipient of this year's award, which is given annually by the chamber in recognition of "a major contribution to the advancement of the economy of the nation." It was presented to Mr. Symes by Edward G. Budd, Jr., president of the Budd Company and chairman of the award committee.

"Senator Mundt of South Dakota recently observed," Mr. Symes said, "that whereas economics was the controlling factor in our political life 25 years ago, politics is today the controlling factor in our economic life. I would add that since free enterprise as we know it is the very foundation of our economy, and if politics is going to control it from within, we as businessmen simply must have a voice in it—and stand up and be counted—not lose by default."

Mr. Symes called it the duty and the right of business executives to participate more fully in public undertakings which demand the special skills they spend their lives acquiring and developing through constant use. The businessman who failed to participate in such activities, he said,would not be doing justice to either his community or the corporation paying his salary.

The peculiar talents and experience of the business executive are especially needed, he pointed out, in community affairs involving such matters as "large expenditures for capital improvements or maintenance, long-range planning and a practical program for ultimate accomplishment, solution of problems that come with changing times, and opportunities to bring in new capital." Business know-how is essential, he said, if such projects are to be handled "within the framework of sound fiscal judgment and practical budgets."

Although there has long been more "sociological thinking" in the business world than was generally recognized, Mr. Symes said, it was not too long ago that "a good many people looked upon successful businessmen as uncaught criminals—especially if they were prominent in big corporations, and that seemed almost to be the official attitude in Washington." Now, in contrast, he said, "we hear that desperation for votes drives them to extremes."

Regarding company-sponsored personal security and "social benefits" for employees, to which he recalled businessmen and corporations were often pictured in the past as being firmly opposed, Mr. Symes asserted that "labor and government pressures by no means deserve all the credit" for the fact that such benefits are now generally provided.

"There were employee benefits in many corporations long before labor and government pressures for them appeared," he said. "Nor did management in general resist the trend to them in the savage way that is sometimes alleged. What management did do, and must continue to do, was to bear firmly in mind that such benefits do in the last analysis come out of corporate revenues—and that if too much comes out, there will eventually be no earnings and no corporation. Agreements for job benefits are of no use to an employee if the company goes broke and the job disappears."

Mr. Symes said he very much doubts "if any significant proportion of industry is now hostile to unions as such, or to bargaining with them." He pointed out that "many industries, including his own, have had unions for decades and have bargained with them on an unemotional and matter-of-fact basis." Generally, however, he

A Soft Touch!

Some of the duties and privileges of being a railroad executive were recently demonstrated to Phillips Amerman, 11-year-old Boy Scout, by Morton S. Smith, vice-president and regional manager of the Pennsylvania at Pittsburgh. Phillips, and three other Scouts, had each won $50 in stock in a Pittsburgh railroad and appointment as "general manager" for a day in an essay contest sponsored by the region's Community Relations Committee. The boys wrote on "What I Learned on Scout Railroad Day" after being among the 9,000 who participated in rail excursions sponsored by the committee last January. Other railroads that had one-day "general managers" were the Baltimore & Ohio, the Pittsburgh & Lake Erie and the Pittsburgh & West Virginia.

voiced the opinion that both sides in the management-union relationship "have done a bit of growing up."

Historically, he said, the recent emergence of top rank businessmen as cabinet officers in Washington completes a cycle that began when the Declaration of Independence was written, the Revolution fought and won, and the Constitution drafted under the active leadership of such "big businessmen" of their time as Benjamin Franklin, George Washington, Robert Morris, and John Hancock.

"Today," he said, "we have a group of top-ranking businessmen serving our government in high places in Washington—doing it for love of country and at great personal sacrifice to themselves—and we all ought to be grateful for what they are doing. I believe that what they have done and are doing is going to make it easier for future Presidents of either party to call men of their calibre to Washington without the excuse of a national emergency."

Escalator Clauses Raise Wages 3 Cents Per Hour

Railroad employees working under agreements with so-called escalator clauses got a cost-of-living wage increase of three cents per hour on May 1.

The escalator clauses tie cost-of-living adjustments to the Consumer Price Index published by the Bureau of Labor Statistics of the United States Department of Labor. They provide for increases of one cent per hour for each increase of 5/10 of a point in the index, adjustments to be made on the basis of the March and September indexes.

The March index was 118.9, which was 1.8 points above the September 1956 base of 117.1. Thus the 3-cent increase.

Fifth of 'Potential' Tonnage Lost Since 1947

Between 1947 and 1954, Class I railroads lost more than one-fifth of their "potential" freight tonnage.

That is the extent to which they failed in 1954 to maintain their 1947 position as carriers of freight originating from production in this country. This was shown by the latest study (Statement No. 570) of "Fluctuations in Railway Freight Traffic Compared with Production" which has been issued by the ICC's Bureau of Transport Economics and Statistics.

Potential tonnage is tonnage the railroads would have carried if they had maintained their 1947 position. The ICC bureau set the actual tonnage against this, and the difference indicated the railroad "loss."

Potential tonnage in 1954 was put at 1,548,745,000 tons. Railroad traffic in that year was 1,240,124,000 tons. The "loss" was 308,621,000 tons, or 20.2% of the potential.

In 1947 railroad tonnage amounted to 41% of the total production. The 1954 proportion was only 29.4%. Production increased 12½% between 1947 and 1954, but railroad tonnage was up less than 1%.

NP and Shell Oil to Explore New Area

The Northern Pacific and the Shell Oil Company plan immediate joint exploration and development of a new area of more than 15,000 acres in the Williston oil basin in Montana.

This was announced by Robert S. Macfarlane, NP president, at the railroad's recent annual meeting of shareholders. Mr. Macfarlane told stockholders the NP's net oil production for the first quarter of 1957 was 492,022 barrels, compared with 299,614 barrels for the 1956 first quarter. First-quarter revenue from oil and gas was $1,091,831, compared with $657,758 in 1956.

Working interests of the NP and Shell in the new exploration and development project will be about equal, Mr. Macfarlane said. The NP will have a royalty interest in production from its lands in addition to the company's working interest production.

Genet Doesn't Rate RRs as Competition

Railroad prestige took a hard rap recently when Greyhound Corporation President A. S. Genet declared that he doesn't consider railroads any threat to growth plans for his company.

Buses, he insisted are "basically, the proper way to move people" because the bus industry can provide better service at a lower cost than any other form of mass transport." He was addressing the New York Society of Security Analysts.

Answering a question as to how he sized up the railroad passenger potential in four key areas as defined by the Budd Company's President E. G. Budd, Jr. (Railway Age, Apr. 29, p. 11), Mr. Genet commented that he's not interested in the commuter business and doesn't think it can be profitable for any private agency.

In the other areas, he went on, "we don't consider the railroads as competition. Where we're going for our market is to the private automobile."

He said that because railroad services in the southeast, for example, are based on inconvenient schedules, Greyhound can and does charge higher ticket fares and makes money.

He expressed some concern over the growth of air coach business, but emphasized that Greyhound is now challenging even air schedules on a downtown-in-one-city to downtown-in-another-city basis within some territories.

Outlining plans for getting more business for his company, Mr. Genet told of extensive sales training programs for Greyhound personnel, management courses for prospective executives, expansion of Greyhound's motel and car-leasing operations and the possibility that the company will go into truck rentals, too.

Hitting at the railroads by implication, he said "Greyhound has not cut miles" but is extending its operations. "We're looking for more and more places where we can put on more and more schedules to get more and better utilization of our equipment."

Mr. Genet also countered railroad criticisms that the buses are helped by not having to pay the taxes railroads do. "We're far from being a subsidized industry," he declared. "Our taxes run seven cents a mile ($35 million last year). That's a lot of money."

SP May Use Zone Fares for Commuters

A simplified ticket system utilizing zone fares will be coupled with an increase in commuter rates for patrons of the Southern Pacific's San Francisco suburban service, if a plan before the California Public Utilities Commission is put into effect.

The Southern Pacific hopes to realize about $300,000 annually out of the "moderate" increases and economies resulting from the zone fare system.

Five fare zones would be created. Four would contain five stations

each. Zone 5 would include the 10 outermost stations on the San Jose and Los Gatos lines. Fares for all stations in a zone would be identical.

Existing fare structures would be greatly simplified under the plan. The eight types of tickets and 1,600 fares used currently would be replaced by six ticket forms and 164 fares.

Also involved in the proposal is liberalized use of five-day and everyday monthly and weekly commuter tickets. Purchasers of these types of tickets could use them for as many trips a day as desired.

All things—including higher costs—considered, though, the Southern Pacific doesn't expect the combination of a fare increase and operating economies to put its commuter service in the black on an out-of-pocket basis.

ICC Issues Report On Ripley, N.Y., Wreck

The Interstate Commerce Commission has found that the February 8 accident on the New York Central near Ripley, N. Y., was caused by failure to operate the involved passenger train in accordance with signal indications.

Failure of the automatic train-stop system, resulting from a defective inductor, was held to be a contributory factor in the cause of the accident. Another commission finding was that all involved signals were operating properly.

The accident was a side collision between the passenger train (eastbound No. 74), and a westbound freight (Extra 1704 West). It resulted in the death of the passenger-train engineman and the injury of one passenger. It stimulated extra interest in railroad circles because it occurred in territory where the Central recently placed in service a new system of centralized traffic control (Railway Age, Feb. 18, p. 10, and Jan. 21, p. 44).

The commission's investigation was a formal proceeding, docketed as Ex Parte 209. The report of Division 3 was by the division chairman, Commissioner Tuggle.

The accident occurred on a tangent stretch of line at a point designated as RW, which is 0.6 miles west of Ripley and 66.7 miles west of Buffalo, N. Y. It was on a two-track line over which trains moving in either direction on either track are operated by signal indications supplemented by an intermittent inductive automatic train-stop system. The freight train, consisting of a three-unit diesel-electric locomotive, 76 cars and a caboose, was moving through a crossover from main track No. 2 to main track No. 1 when its 27th car was struck by No. 74. The latter, consisting of a two-unit diesel, three baggage cars and three coaches, was proceeding eastward on No. 2 track.

Twenty-eight freight cars, the passenger train's locomotive and its three baggage cars were derailed. All of the derailed equipment was considerably damaged, 13 of the freight cars having been destroyed.

Four signals were involved, two governing movements of each train. Those governing the freight train, and found by the commission to have been observed, were semiautomatic signals located 2.09 miles and 304 ft east of the point of collision. Those governing the passenger train were an automatic signal, 672E, and a semiautomatic signal, 662E, located, respectively, 1.64 miles and 182 ft west of the point of accident.

These signals are of the color-light type and are approach lighted. They form part of the new traffic-control system which, except for a short distance in the vicinity of Erie, Pa., extends between a point about nine miles west of Buffalo to a point about 15 miles east of Cleveland, Ohio. Control machines are located at Erie.

The train-stop system consists of wayside inductors, which are interconnected with the signal system, and of receivers, relays, and related apparatus on the locomotives. The inductor is a U-shaped device with a laminated magnetic core fitted with pole pieces. The core is wound with a coil which is connected to a relay of the signal system.

When the signal displays a restricted aspect the circuit of the coil is open, and the train-stop apparatus of a passing locomotive will be actuated to cause an automatic application of the brakes unless the engineman operates an acknowledging lever as the locomotive passes the inductor. A whistle in the control compartment sounds each time an automatic brake application is forestalled by use of the acknowledging lever.

Signal 672E indicated proceed-preparing-to-stop-at-next-signal when it first became visible to the engineman of the passenger train. The commission's report said the engineman then made a service application of the brakes. It went on to say that the fireman could not see the acknowledging lever of the train-stop equipment, but, from the engineman's movements the fireman "assumed that he pulled the lever into forestalling position" as the locomotive was closely approaching signal 672E.

(Continued on page 48)

Technical Tidings

Selected from May Railway Monthlies

Spending money to save money has paid off for two more railroads. The Lehigh Valley reduced annual costs at its Sayre, Pa., shops 65% by spending $602,000. The Erie recently spent over $250,000 for new machine tools and materials-handling equipment at its Meadville, Pa., wheel shop, concentrated all locomotive and car wheel work there, and disposed of wheel-turning equipment all along its line. Two articles in Railway Locomotives & Cars give the details.

•

Automatic block signal system on the Texas & Pacific, using Trakode, eliminates use of line wires for signal controls. The innovation is reported, in the first of two articles, in Railway Signaling & Communications.

•

New method of mixing cement, sand and water that's aimed at complete wetting and hydration of the cement is described in Railway Track & Structures. Cement mixes produced by this method are injected into preplaced coarse aggregate to produce what is called Colcrete. The article tells how a badly deteriorated retaining wall on a German railroad was reconstructed by this technique.

•

Performance of its gas turbine-electric locomotives is proving "attractive" to the Union Pacific, despite occasional road failures. In one typical month, the 25 units it has in service accounted for 18.2% of the gross ton-miles produced on the road's Eastern district. Operating results, details of the road failures and what is being done about them, are described in Railway Locomotives & Cars.

•

Aluminum wire is being installed by the Rock Island for a dispatcher's circuit in an eastern Colorado sleet-storm area. Railway Signaling & Communications tells why the line was installed and how the wire was strung.

•

Panel of experts at the recent convention of the American Railway Engineering Association discussed many aspects of the use of ties in track Their comments are set forth in Railway Track & Structures.

People in the News

BALTIMORE & OHIO.—George E. Dove, general freight agent, Eastern region, Baltimore, appointed to newly created position of manager railroad trailer service at that point. Mr. Dove will have responsibility for system-wide sales and service supervision of the B&O's trailer-on-flat car activities.

Harry D. Graffious, superintendent, Buffalo division, retired April 30.

BANGOR & AROOSTOOK.—Thomas J. Clark, general traffic agent, **Illinois Central,** Chicago, elected vice-president—sales, B&A, succeeding **Herbert W. Moore,** resigned.

Lewis B. Neal, traveling auditor, appointed assistant to treasurer, replacing **Maurice S. C. Baker,** who retired May 1.

George E. Dove
B&O

Thomas J. Clark
B&A

BURLINGTON. — O. J. Smidl, assistant vice-president of the operating department in charge of contracts, Chicago, retired April 30.

CANADIAN NATIONAL.—The following superintendents of signals appointed district supervisor of signals and their former positions abolished: **A. P. Young,** Southern Ontario district, Toronto; **P. Serviss,** Montreal district, Montreal; **M. Leblanc,** Quebec district, Quebec; and **N. W. Mountain,** Northern Ontario district, North Bay.

Robert B. Armstrong, comptroller, Montreal, appointed vice-president, accounting and finance.

William A. Howard named supervisor of press and radio news services, Montreal, and is succeeded in public relations duties at Ottawa by **Walter A. Smith,** assistant executive representative, Ottawa.

Douglas MacLean appointed supervisor marine services, Maritime provinces.

James B. Thorpe, general agent, CNR—Grand Trunk, Chicago, appointed general agent, passenger department, Detroit, succeeding **Earl H. R. Eastwood,** promoted to assistant manager, mail and baggage traffic, Montreal.

CHESAPEAKE & OHIO.—H. T. Seal, assistant engineer of buildings, appointed engineer of buildings, Richmond, Va., succeeding **E. W. Niblet,** retired. **J. H. Adams** appointed assistant engineer of buildings, succeeding Mr. Seal.

Robert B. Armstrong
CNR

W. H. Edwards
L&NE

CHICAGO & NORTH WESTERN.—John A. Sims, assistant to general purchasing agent, Chicago, promoted to assistant general purchasing agent there, to succeed **Malcolm B. Moore,** who retired April 30. **James J. Bilek** named to replace Mr. Sims.

DULUTH, SOUTH SHORE & ATLANTIC.—Bernard Levenduski appointed general agent, Duluth, Minn., succeeding **P. W. Auren,** transferred to Minneapolis.

FRISCO.—T. M. Galloway and **C. W. Williamson** appointed terminal trainmasters, Kansas City, Mo., and Memphis, Tenn., respectively. The following named assistant superintendents: **J. M. Godfrey,** Sherman, Tex.; **A. C. Hart,** Tulsa, Okla.; **E. A. Osborne,** Springfield, Mo., and **F. E. Wait, Jr.,** Neodesha, Kan.

GRAND TRUNK WESTERN.—C. J. Morris, assistant to chief engineer, Central region, **Canadian National,** Toronto, Ont., appointed chief engineer, GTW, Detroit, Mich., effective April 1, succeeding **A. N. Laird,** retired.

LEHIGH & NEW ENGLAND.—W. H. Edwards, president since December 1947, retired April 30, after 41 years of railroad service, of which more than 26 had been with the L&NE. Mr. Edwards will continue to serve as a director and as chairman of the executive committee.

H. C. Tunison, general manager and chief engineer, elected a vice-president, Bethlehem, Pa. Mr. Tunison will continue as general manager, and the office of chief engineer is abolished.

LOUISVILLE & NASHVILLE-NASHVILLE, CHATTANOOGA & ST. LOUIS.—Harold E. Sehler appointed general agent, Washington, D.C.

MISSOURI-KANSAS-TEXAS.—C. E. Smith, general freight agent (rates), St. Louis, appointed assistant freight traffic manager there, succeeding **R. R. Chavis,** resigned to become a member of Rate Committee, Southwestern Freight Bureau. **W. J. Weaver,** assistant general freight agent (rates), St. Louis, named general freight agent there.

MISSOURI PACIFIC.—Winston Tompkins, manager of the service bureau (operating department), St. Louis, appointed assistant general superintendent of transportation there, succeeding **Everett W. Hargrave,** named superintendent of transportation, American Refrigerator Transit Co. (Railway Age, Apr. 22, p. 44).

Raymond J. Marshall appointed general agent, Birmingham, Ala., to succeed **Thomas B. Arnold,** promoted (Railway Age, Apr. 29, p. 37).

NASHVILLE, CHATTANOOGA & ST. LOUIS—L. A. Heatherman, general agent, Washington, D.C., retired May 1.

NEW HAVEN.—Paul E. O'Neill and **Albin W. Olsson** appointed assistants to chief of operations.

NEW YORK CENTRAL.—Robert E. Kappauf, assistant comptroller, appointed comptroller, New York, succeeding **George H. Albach,** who retired April 1.

Robert E. Kappauf
NYC

John C. Kenefick
NYC

John C. Kenefick, assistant general manager, Eastern district, Syracuse, N.Y., promoted to general manager of a newly created New York district, which will embrace all NYC operations in the New York metropolitan area, including commuter divisions, marine operations and West Shore (New Jersey) facilities. Previously these operations were under jurisdiction of the Eastern district.

James O. Boisi, real estate attorney, appointed director of real estate, New York. **Charles H. Morton,** general land and tax agent, system, retired April 30.

R. J. Hardenberg appointed division engineer, Ohio Central division, Columbus, Ohio.

P. K. Cruckshank named director of automotive equipment, New York.

George E. Harrington, assistant district freight sales manager, Baltimore, appointed district freight sales manager there, succeeding **James F. Jones,** retired.

John E. Schmitt appointed communications engineer, Western district, Cleveland, Ohio. Mr. Schmitt was formerly telephone engineer with the Eastern Illinois Telephone Company, Rantoul, Ill. **Richard L. Straw** named communications engineer, Eastern district, Syracuse, N.Y. Mr. Straw was formerly transmission engineer with General Telephone Company of Wisconsin, Plymouth, Wis.

NICKEL PLATE. — W. E. Erlenbach, general freight agent, Cleveland, appointed freight traffic manager there, succeeding **George B. Merrill,** retired. **Kenneth B. Chilcot,** division freight agent, Canton, succeeds Mr. Erlenbach. **Jacques Gross** named general agent, Washington, D.C., succeeding **Basil F. Bruce,** who replaces Mr. Chilcot.

PENNSYLVANIA.—P. W. Triplett, engineer of construction, Philadelphia, appointed special assistant to vice-president and regional manager, Pittsburgh.

J. T. Kelly, joint facility examiner, Buckeye region, Cincinnati, named supervisor of contracts, Buffalo, N.Y., a new position.

Richard L. Baker appointed assistant secretary, Philadelphia.

W. D. Murphy, assistant trainmaster, Pittsburgh region, Conway, Pa., named trainmaster, Buffalo, succeeding **J. C. Sperry.**

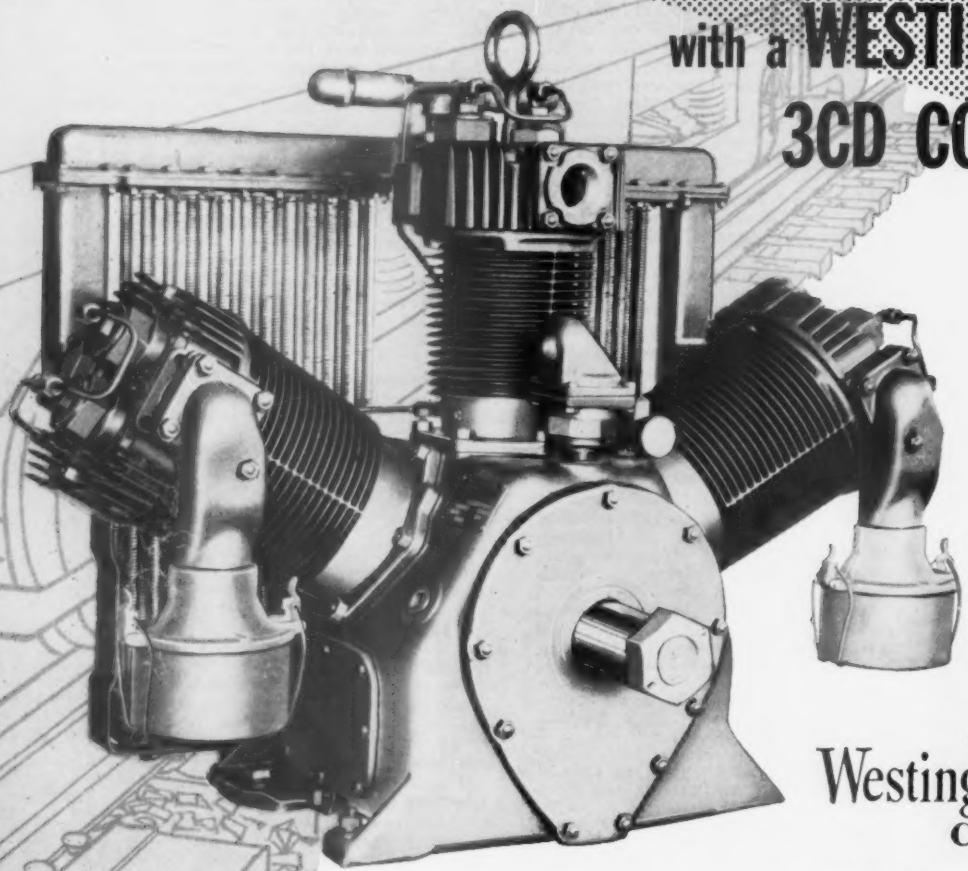
J. Earle Dermond and **Robert W. Loder,** assistants to treasurer, promoted to assistant treasurers, Philadelphia.

Charles T. Groton, freight agent, Pittsburgh, appointed superintendent, freight stations, Northwestern Region, Chicago, succeeding **David S. Greer,** promoted (Railway Age, Apr. 22, p. 44).

TENNESSEE CENTRAL. — Leo Nielson, vice-president and treasurer, Nashville, Tenn., elected vice-president—traffic, succeeding **Charles S. Blackman,** who retired May 1. **S. M. Dickerson** appointed manager rates and divisions, Nashville.

Good stops start here...

with a WESTINGHOUSE 3CD COMPRESSOR



When you consider all the uses for air on a modern train, no single air device is more important than the air compressor.

The Westinghouse Air Brake 3CD compressor, shown here, is unsurpassed for reliability. Millions of hours of operation have proved it to be a most dependable compressor for railroad use.

Westinghouse Air Brake
COMPANY

AIR BRAKE DIVISION WILMERDING, PA.

GEARED TO PROGRESS
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Another addition to full line standardization

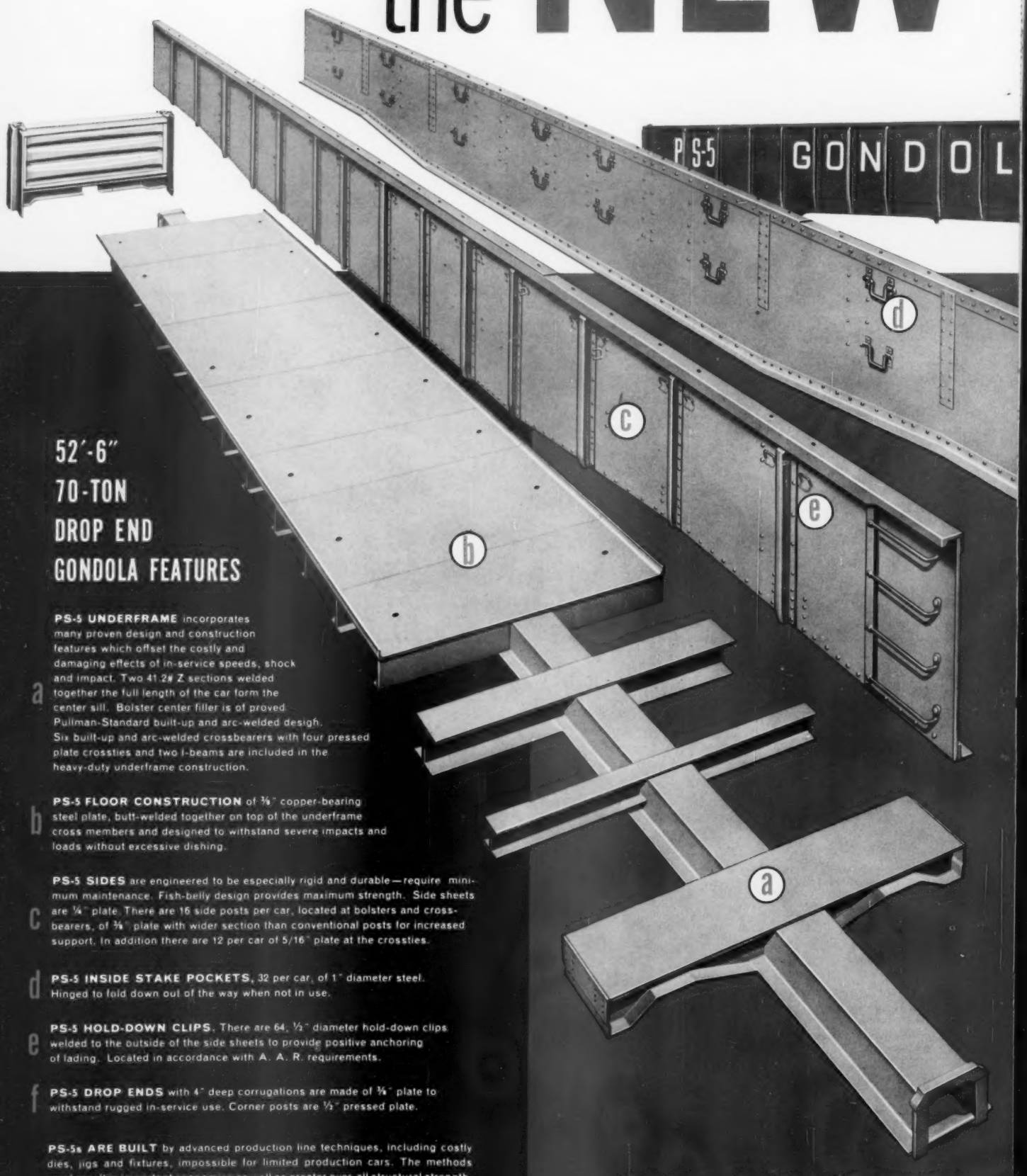
the new

PULLMAN-STANDARD

PS-5

gondola

the NEW



52′-6″ 70-TON DROP END GONDOLA FEATURES

PS-5 UNDERFRAME incorporates many proven design and construction features which offset the costly and damaging effects of in-service speeds, shock and impact. Two 41.2# Z sections welded together the full length of the car form the center sill. Bolster center filler is of proved Pullman-Standard built-up and arc-welded design. Six built-up and arc-welded crossbearers with four pressed plate crossties and two I-beams are included in the heavy-duty underframe construction.

PS-5 FLOOR CONSTRUCTION of 3/8″ copper-bearing steel plate, butt-welded together on top of the underframe cross members and designed to withstand severe impacts and loads without excessive dishing.

PS-5 SIDES are engineered to be especially rigid and durable—require minimum maintenance. Fish-belly design provides maximum strength. Side sheets are 1/4″ plate. There are 16 side posts per car, located at bolsters and crossbearers, of 3/8″ plate with wider section than conventional posts for increased support. In addition there are 12 per car of 5/16″ plate at the crossties.

PS-5 INSIDE STAKE POCKETS, 32 per car, of 1″ diameter steel. Hinged to fold down out of the way when not in use.

PS-5 HOLD-DOWN CLIPS. There are 64, 1/2″ diameter hold-down clips welded to the outside of the side sheets to provide positive anchoring of lading. Located in accordance with A. A. R. requirements.

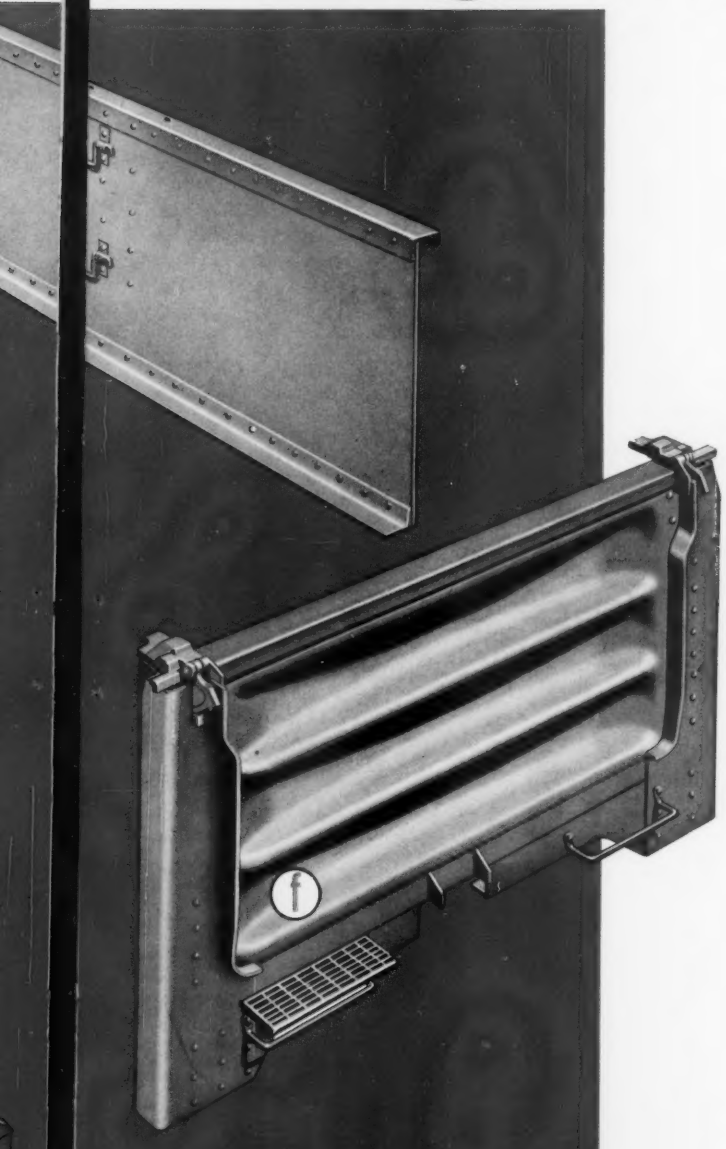
PS-5 DROP ENDS with 4″ deep corrugations are made of 3/8″ plate to withstand rugged in-service use. Corner posts are 1/2″ pressed plate.

PS-5s ARE BUILT by advanced production line techniques, including costly dies, jigs and fixtures, impossible for limited production cars. The methods used result in important economies as well as greater over-all structural strength.

• 52′-6″ • 65′-6″ • DROP ENDS

PS-5 GONDOLA

EVOLVED from 8 years' rugged service on the FRISCO *and 3 years on the* Rock Island



• FIXED ENDS

Development of the new, standardized PS-5 Gondola resulted from exhaustive design and engineering collaboration between the St. Louis-San Francisco Railroad, the Rock Island and the world's leading carbuilder, Pullman-Standard. This cooperative effort spanned many months . . . existing rolling stock was studied, areas for improvement were probed, the effects of current car handling practices were investigated and potential trouble spots were eliminated. The Pullman-Standard concept of *flexible* standardization was the thread that wove these studies together . . . standardization that would allow Pullman-Standard to apply the economies and quality controls of mass production to the building of these cars while providing sufficient design versatility to meet the varied use requirements of owners and shippers. Finally, a design was developed that would meet the hard in-service demands made on gondolas by the Great American Railway System.

This advanced design was built into four hundred 52′-6″ gondolas which rolled off the production line in 1949 for the Frisco. 1953 saw the first of three hundred 65′-6″ gondolas, built to this same basic design, delivered to the Rock Island. Now eight years of punishing service are behind the Frisco's original lot of gondolas while the Rock Island units are in their fourth year.

This service-proved gondola design has now been further refined through Pullman-Standard's flexible standardization concept, and the gondola, the PS-5, has been added to the Pullman-Standard family of standardized freight cars.

Railroad purchasers of the PS-5 now receive all the plus advantages of Pullman-Standard standardization . . . thoroughly proved design, mass production economies and consistent superior craftsmanship applied through the carbuilding experience and know-how of the world's largest carbuilder.

Complete specifications detailing the new PS-5 standardized gondola are available from your Pullman-Standard representative. Call him—he will be pleased to discuss this new car with you and show you how an investment in the PS-5 means lower first cost, more dependable performance, minimum maintenance and railroad-shipper acceptance.

PULLMAN-STANDARD

CAR MANUFACTURING COMPANY, *Subsidiary of Pullman Incorporated*
221 N. LA SALLE STREET, CHICAGO 1, ILLINOIS
BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO, WASHINGTON

PS-5 specifications*

P-S Standardization Provides Flexibility in Basic PS-5 Design

Pullman-Standard's concept of standardization allows sufficient flexibility for P-S engineers to work with buyers in adapting the PS-5 to special requirements. Typical options you may specify:

length Either 52′-6″ or 65′-6″ lengths are available.

sides Side heights can be provided to suit your requirements.

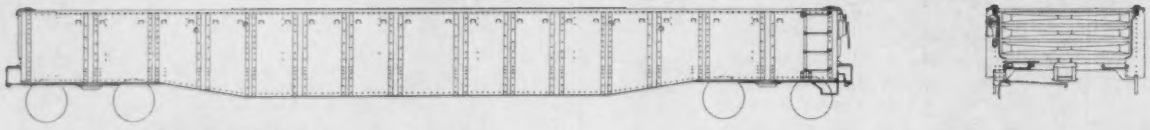
floors PS-5 Standardized Gondolas can be provided with floors of welded steel, P-S Nailable Steel Floor, wood or a composite of wood and steel.

ends Either drop or fixed ends are available on the new PS-5.

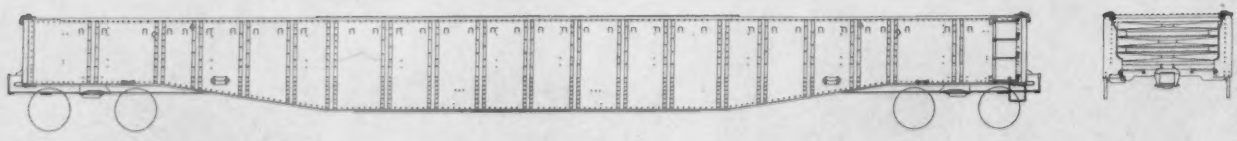
*Specifications subject to change without notice.

General Dimensions

	52′-6″ 70-Ton Drop End Gondola	65′-6″ 70-Ton Mill Type Drop End Gondola
Length inside	52′-6″	65′-6″
Length over strikers	54′-6″	67′-6″
Length between trucks	43′-6″	56′-6″
Width inside	9′-6″	7′-9″
Inside height	3′-6″	3′-6″
Inside stake pockets	Thirty-two collapsible inside stake pockets per car.	Forty collapsible inside stake pockets per car.
Hold-down clips	Sixty-four per car	Eighty per car
Drop ends	Drop ends of ⅜″ plate, Pullman-Standard design with 4″ deep corrugations.	Drop ends of ⅜″ plate, Pullman-Standard design with 4″ deep corrugations.



52′-6″ PS-5 Gondola



65′-6″ PS-5 Gondola

WORLD'S LARGEST CARBUILDER

PULLMAN-STANDARD

CAR MANUFACTURING COMPANY

SUBSIDIARY OF PULLMAN INCORPORATED

221 NORTH LA SALLE STREET, CHICAGO 1, ILLINOIS

BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO, WASHINGTON

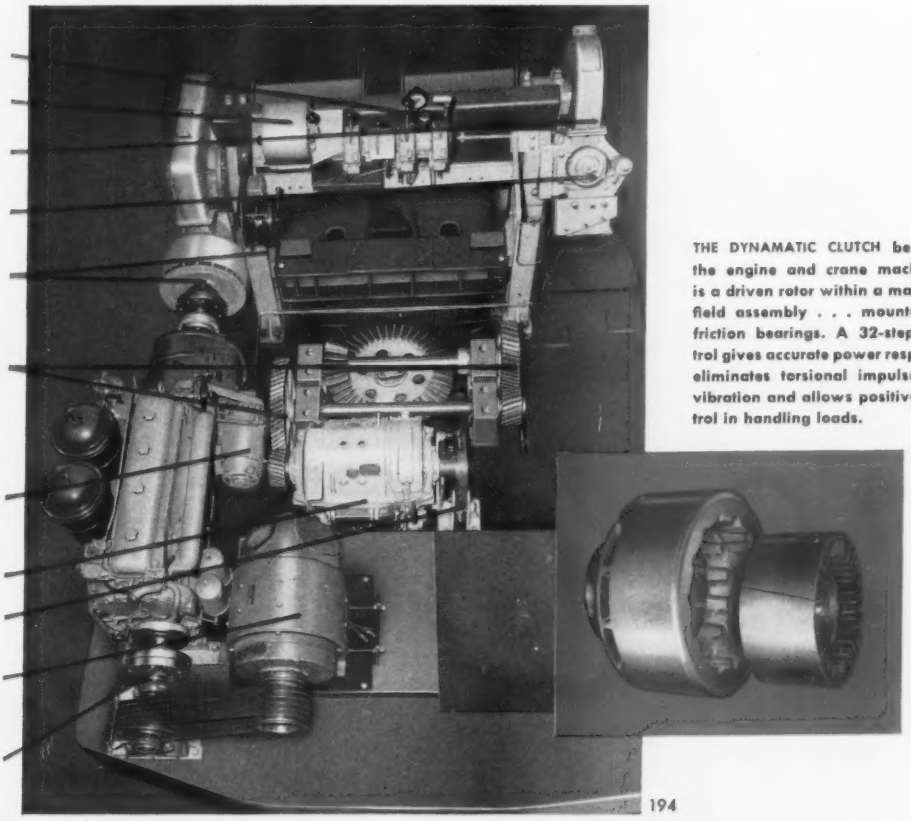
LEADER TO PROGRESS P I MEMBER

Printed in U.S.A.

HOW THE ELECTRIC ROTATING MECHANISM IN I. B. LOCOMOTIVE CRANES increases operating speed and efficiency

Wherever crane rotation is unusually severe (magnet and bucket operations), an electric rotation unit (optional at extra cost) can be supplied with Industrial Brownhoist Cranes. The savings in maintenance and the greater efficiency plus the elimination of friction clutches offset the cost in a short time. The generator in the electric rotating motor is large enough to supply power for magnet service, and the complete rotation mechanism is easily accessible, being mounted on the top of the rotation bed. Reversing the flow of current through the motor, quickly and smoothly reverses the direction of rotation. • The carbody, trucks, monitor-type cab, and machinery arrangement of I. B. equipment have been equally well engineered. Write for Catalog No. 548 for complete information.

- PUSH BUTTON MAGNET CONTROL
- ROTATING CONTROLLER
- SAFE WORM DRIVEN BOOM HOIST
- AUTOMATIC BOOM HOIST BRAKE
- DYNAMIC CLUTCH AND CONTROLLER
- ELECTRIC ROTATION GEAR REDUCTION UNITS MOUNTED ON ANTI-FRICTION BEARINGS (HERE SHOWN WITH OIL CASES REMOVED)
- 1500-WATT BATTERY GENERATOR FOR STARTING AND NIGHT LIGHTING EQUIPMENT
- ROTATING MOTOR
- ROTATING BRAKE
- ROTATING AND MAGNET GENERATOR SUPPLIES CONSTANT VOLTAGE
- FLEXIBLE COUPLING



194

THE DYNAMATIC CLUTCH between the engine and crane machinery is a driven rotor within a magnetic field assembly . . . mounted on friction bearings. A 32-step control gives accurate power response, eliminates torsional impulse and vibration and allows positive control in handling loads.

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BALLAST CLEANING and RAIL GRINDING SERVICE

Geared to Progress · P R I · Member

The exclusive SPENO Method of Ballast Cleaning and the SPENO Rail Grinding Train have proved themselves to be time, cost, and maintenance savers for our contractual clients.

You may contract for one or both of these services—secure that you have joined company with many other outstanding and forward looking railroads.

Write today for future availabilities of equipment.

Just Ask the Railroads That have used us!

FRANK SPENO RAILROAD BALLAST CLEANING CO., INC.
306 North Cayuga St., Ithaca, N. Y.

This 9-ft Alcoa® Aluminum boxcar door weighs 300 lbs.
It won't rust . . . never needs painting.
One man can open it easily.
It will last a long time and save you money.
It's another railway application of Alcoa Aluminum in use on leading railroads since 1944.

A regular 9-ft boxcar door weighs 700 lbs.

Its maintenance is high, requires frequent painting.

To open the heavy door, exasperated trainmen attack it with crowbars, sledges, fork trucks.

Doors get bashed out of shape, must be replaced.

Progressive railroaders are using more and more light, strong, rust-free Alcoa Aluminum—for lightweight trains, tank cars, baggage and boxcar doors, lading bars, crossbucks, signs, freight and passenger stations. Get more information on the application you are interested in. Write: ALUMINUM COMPANY OF AMERICA, 2180-E Alcoa Building, Pittsburgh 19, Pa.

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YOUR GUIDE TO THE BEST IN ALUMINUM VALUE

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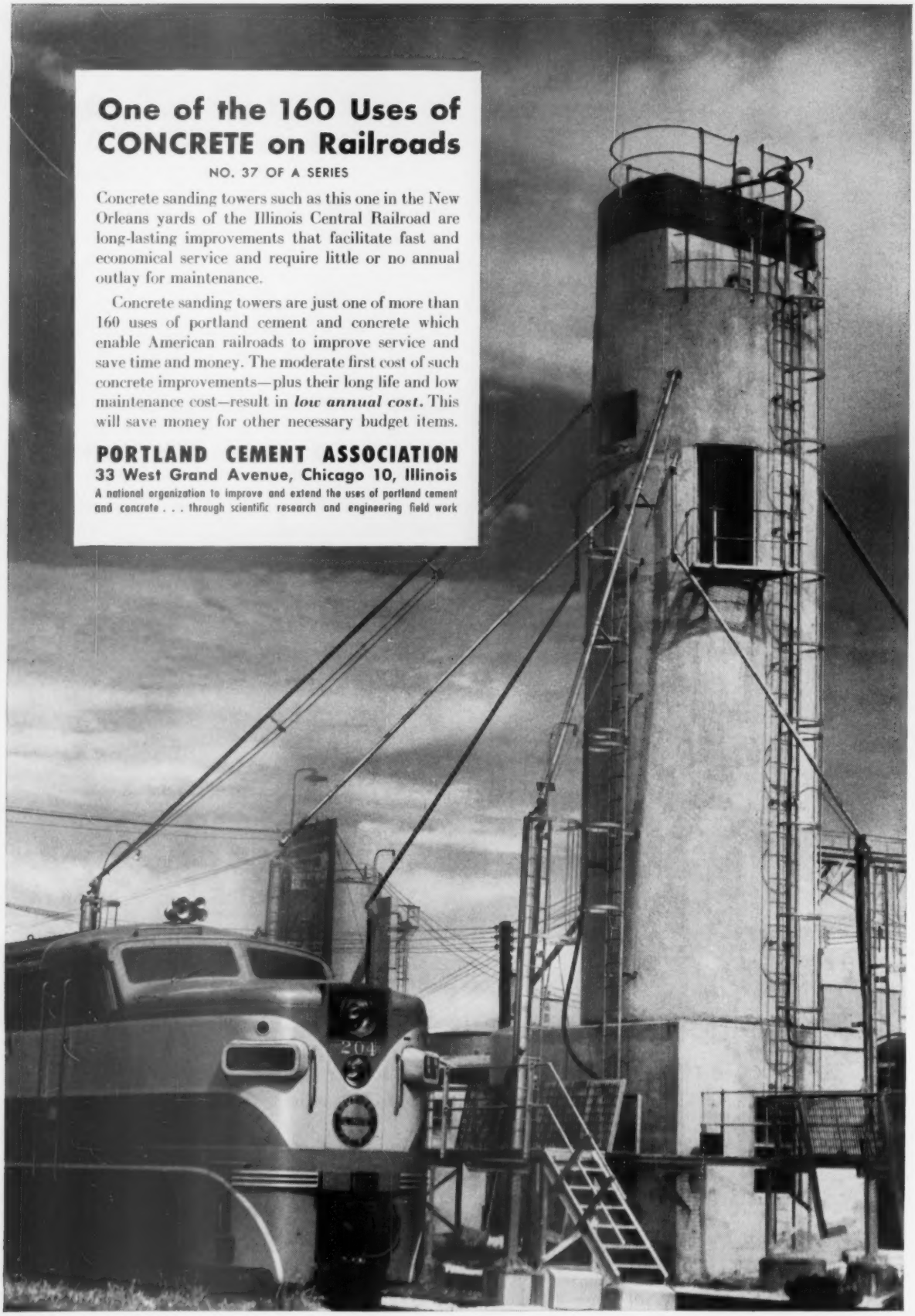


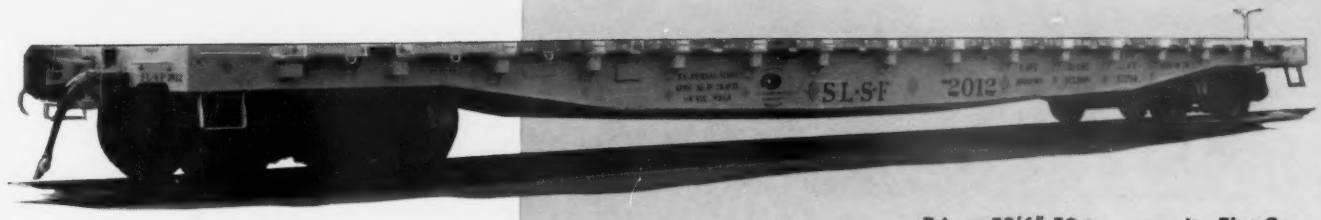
One of the 160 Uses of CONCRETE on Railroads

NO. 37 OF A SERIES

Concrete sanding towers such as this one in the New Orleans yards of the Illinois Central Railroad are long-lasting improvements that facilitate fast and economical service and require little or no annual outlay for maintenance.

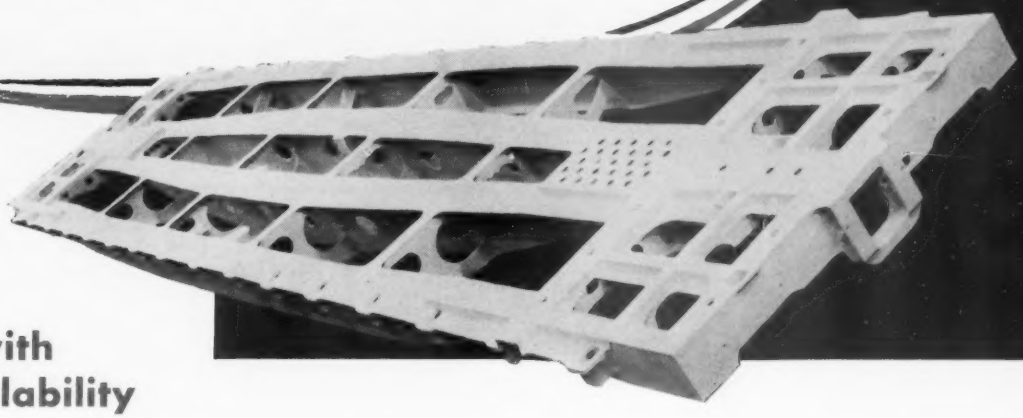
Concrete sanding towers are just one of more than 160 uses of portland cement and concrete which enable American railroads to improve service and save time and money. The moderate first cost of such concrete improvements—plus their long life and low maintenance cost—result in ***low annual cost.*** This will save money for other necessary budget items.

PORTLAND CEMENT ASSOCIATION
33 West Grand Avenue, Chicago 10, Illinois
A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work



Frisco 53'6" 50-ton capacity Flat Car

You'll realize more from your investments in new flat cars when built with Commonwealth One-Piece Underframes



- longer life with greater availability
- underframes are maintenance-free
- safer shipping for heavier loads

The St. Louis-San Francisco Railway, like many other railroads, makes repeated investments in Commonwealth cast steel one-piece underframes for flat cars, because they have *proved themselves profitable* in over 20 years of service.

These underframes provide greatest strength at minimum weight, and enable each car to bring in maximum revenue through greater availability, longer life and lowest maintenance cost. The low height from rail to top of decking permits higher freight loads, and the exceptional load-carrying capacity of these underframes means safer shipping for heavier loads.

The profitable performance of Commonwealth Underframes over many years is written in the ledgers of many railroads. For sound economy, invest in Commonwealth Underframes for *your* flat cars.

GENERAL STEEL CASTINGS

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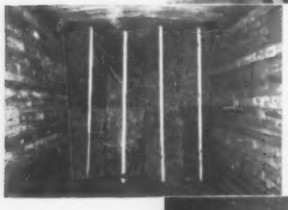
Now! Low cost protection against boxcar infestation...

Economical Johns-Manville Stonefelt (Type K) reduces contamination risks, cuts damage claims

Open corrugations filled with Stonefelt. ▶



◀ Full-size pieces of Stonefelt temporarily in position.

End lining is applied the usual way. ▶

Many costly claims can be avoided by filling the spaces behind boxcar linings where contaminating conditions can exist. When you protect these areas with Johns-Manville Stonefelt® (Type K), danger from insect infestation, corrosion, mold and odor is controlled at the source.

Stonefelt is made of specially treated mineral fibers felted into lightweight batts that *will not settle or shake down.* Strong and durable, its uniform structure of finely divided fibers stops the entrance of insects; acts as a barrier against dust and dirt.

Stonefelt fibers are inert, are not affected by moisture, will not sustain insect life. Virtually indestructible in service, Stonefelt provides continued protection against mold, odors and corrosion.

Stonefelt Type "K" is furnished in cut-to-fit box car sets. Individual pieces are supplied up to 30" x 60" to assure maximum ease of handling. Regular car men can easily apply this material.

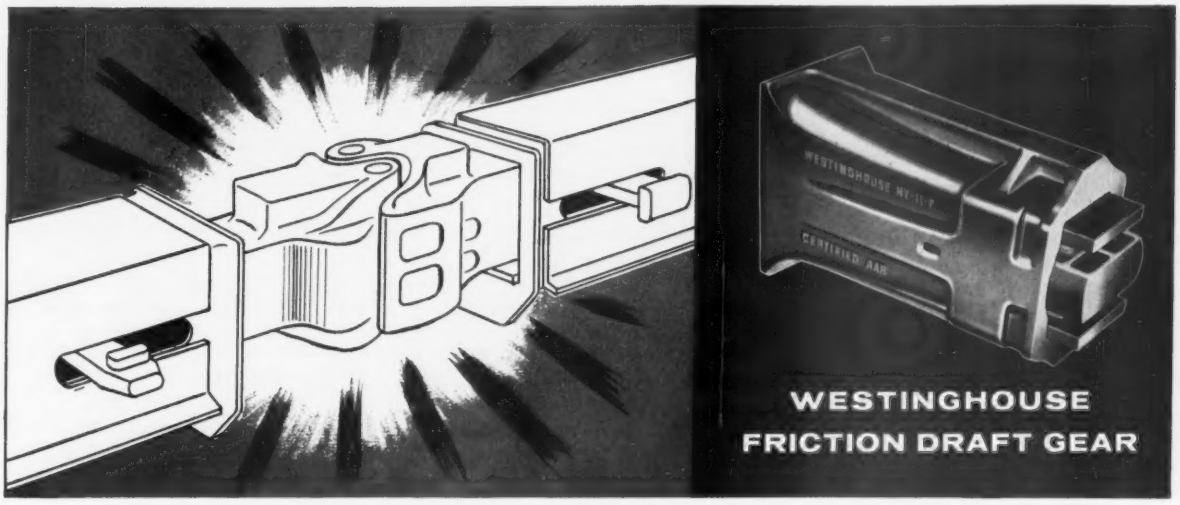
Ask your Johns-Manville representative for complete data and samples, or write to Johns-Manville, Box 14, New York 16, N. Y.

JM PRODUCTS **Johns-Manville** 98 YEARS OF SERVICE TO TRANSPORTATION

Friction

Cushions! Absorbs! Dissipates!

DESTRUCTIVE FORCES



You can't beat fundamentals! Within itself, a good friction draft gear sets up a yielding resistance to shocks, builds up this resistance as shocks are intensified. It does this with characteristically high absorption and low reaction.

That's how the Westinghouse *Friction* Draft Gear *absorbs* the forces between colliding cars; *equalizes* the speed of coupled, moving cars as slack is run in and out, or as brakes are applied; allows serial action as long trains are started. Thus, by cushioning these otherwise destructive forces, the Westinghouse *Friction* Draft Gear protects rigging and car structure, cuts costly lading damage claims.

This is the time-tested principle of the Westinghouse *Friction* Draft Gear.

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Specify
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CHANGING TREND IN MAINTENANCE . . .

Firm Programing vs. Cut Backs

A long-standing and general complaint of railroad maintenance-of-way officers has been that the work under their supervision has been subject to frequent disruptions due to traffic fluctuations. "When management feels it has to save money, we get the first and deepest cuts," they say.

But there's a growing school of thought among management officers to the effect that it's more economical in the long run to give practical assurance that annual maintenance programs, once projected, will not be seriously disrupted.

Here is the reasoning behind this policy, as explained to Railway Age by officers of roads that have adopted it.

The working season for the maintenance-of-way forces is here. But many maintenance officers, while supervising their tie-renewal, ballasting and rail-laying operations, have one ear cocked in the direction of the front office.

They're wondering, as they have every year for a century, whether they'll be allowed to finish their programs without the cut-backs they have often had to put into effect because of fluctuating traffic.

On the other hand, maintenance men on a growing list of roads are no longer haunted by this uncertainty. They're the fortunate ones whose managements have subscribed to the principle that maintenance programs should be allowed to go through pretty much as planned, barring, of course, major emergencies. Adherents of this principle—and they include many top non-engineering officers—are convinced that "firm" annual programing of maintenance work is more economical in the long run than the "stop and go" variety.

The Traditional Method

What do we mean by "stop and go" maintenance? Basically, it's the practice of tying monthly allotments for maintenance work directly to traffic volume. Its purpose, obviously, is to cut expenses when traffic dips. Maintenance men complain it's a method of "balancing the budget" at the expense of the track and other fixed properties.

Here's how the method works as practiced on a large road that expects soon to replace it with a system of annual programing on a relatively "firm" basis. Toward the end of the year a program is prepared covering the heavy maintenance work (tie renewals, track surfacing, rail laying, etc.) to be done the following year. This program, explains one of the road's maintenance officers, is based on the needs of the property but its size depends a lot on estimates of traffic volumes for the year.

Why They Don't Like It

"The trouble is," he adds, "it's just a sort of goal, subject to monthly readjustments. A few days before the end of each month the chief engineer gets from management a figure indicating the amount he can spend for maintenance the following month. This figure may be sharply below the previous month. In any event we never know from one month to the next precisely how much we're going to get. And if things really get bad we're cut right down to the bone."

Maintenance men, as they have been doing for a hundred years, will

What They Say About M/W Programing . . .

. . . On Monthly Basis	. . . On Firm Annual Basis
Prevents precise scheduling of operations	Makes precise scheduling possible
Interferes with orderly conduct of work	Assures work will proceed in orderly manner
Promotes instability of working force	Promotes stability of working force
Results in inefficient use of men and machines	Assures efficient use of men and machines
Reduces morale of supervision and workers	Builds morale of supervision and workers
Causes added expense of recovering distributed materials	Eliminates expense of recovering distributed materials
Results in higher unit costs	Lowers unit costs through higher overall efficiency
Makes proper maintenance difficult	Assures attainment of desired maintenance standard

tell you that this policy involves a world of grief for them—and for their roads. They'll insist, too, that they are not thinking only of the disorganization of their own plans, but also of the extra cost to their companies. Here's how one maintenance man describes the problems.

"When we have to cut down our forces in the middle of the season, there's always the problem of building the force up again when cuts are restored. We can't always get the same men. The new men have to be trained and the old hands have to be retrained, a costly procedure in both cases. Then there's the matter of scheduling the use of machines; how can we get maximum utilization of our equipment if we don't know what work we're going to be doing next week or next month? And don't forget; where materials have been distributed for a job that's been whacked off the budget, we sometimes have to go back and recover the stuff, which is an unproductive expense if I ever saw one!"

What about the effect of such a policy on the condition of the properties? "Deferred maintenance is something that's pretty hard to pin down," explained this same officer. "But we wouldn't have put the work on the budget in the first place if we weren't convinced it was necessary. It has to be done sometime, and the most economical way is to do it in an orderly and systematic fashion."

But Times Are Changing

But the thinking of management has changed, and is still changing, at least on some roads. "A dollar saved at the expense of physical plant can be the poorest dollar you ever laid your hands on," said D. W. Brosnan, executive vice-president of the Southern, in an address a couple of years ago. He advocated a "steady, stretched-out maintenance program" wherein a relatively stable maintenance force works on a carefully regulated schedule.

Cyclical rushes of work and layoffs, that result when the maintenance dollar is used to balance the budget, produce many undesirable effects, he declared. "In the rushes you must hire temporary help. It is always poorer, inexperienced help and it is, therefore, poor economy. Stable work produces stable workers and among stable men you are far less apt to have labor difficulties.

Management's attitude toward the programing of maintenance work is being influenced by several factors. One is a growing conviction that the performance of such work on a cyclical basis is most economical in the long run. If this method is to work successfully, the cycles can be stretched out but they can't be seriously disrupted. Advocates of cycle maintenance point out it not only stabilizes and systematizes but it also promotes efficient use of machinery. Management thinking is also being influenced by the growing pressure to bring about a higher degree of stabilization of the maintenance-of-way forces.

A New Concept Emerges

The result of this revolution in thinking is a new concept of programing. Converts among management seem to be saying: "Since maintenance work is necessary, we might as well do it in the most economical manner." The outcome, where this conviction prevails, is a tendency to regard a maintenance program as a relatively firm commitment not subject to transient current traffic fluctuations.

In its most advanced form this thinking results in maintenance operations that are planned and scheduled in great detail for the entire year with the understanding that nothing less than catastrophic events will be allowed to interfere. Since these programs are based on cycles of the various operations their adoption implies at least a tentative projection of these operations several years into the future.

The Lackawanna was a pioneer in this type of programing. Among other roads that have adapted it are the D&H and the C&O.

"We have been doing this on the Lackawanna since 1940," says G. A. Phillips, chief engineer. "Our maintenance-of-way ratio since that year has averaged less than 10 per cent, not including depreciation and retirements. I will leave the physical condition of the property to the judgment of the observer.* It seems to me that this combination of facts clearly supports an annual budget without month-by-month fluctuations depend-

(Continued on page 32)

*Track men from other roads have frequently remarked that track on the Lackawanna conforms to high standards of maintenance. *Editor*

How Long-Range Programing Works

Is it practicable, or even desirable, to chart maintenance-of-way operations several years in advance? Here's what M. I. Dunn, vice president-operations, C&O, has to say about this question.

"It is my firm opinion that programing should be on a continuing basis, extending over a number of years on a basis of recurrent cycles. Coupled with this continuing program must be constant re-evaluations of anticipated revenue and traffic volume. Annual maintenance budgets should be firmly fixed prior to the beginning of each calendar or fiscal year, but this is something quite apart from the actual programing.

"As I see it, the program as to successive cycles of maintenance can and should be fixed for as much as five years in advance based on anticipated traffic and revenue levels. Once fixed, the program should not be disturbed except where patterns of traffic change.

"The rate of progress of the programed maintenance can be redetermined from time to time in the light of economic necessity, but the program should remain unchanged. To illustrate—a cycle program extending over five years might well be speeded up because of increased traffic, to complete the cycle in four years. Similarly, it might be necessary to extend it to six or seven years under conditions of depressed traffic.

"Budgeting under programed maintenance procedures, increasing or decreasing budget expenditures as may be dictated by necessity, should be made on the basis of equalization or proration of cuts or increases over the 12-month period following the month in which the budget must be adjusted. To illustrate—if it became apparent that a 10 per cent cut in the maintenance budget is desirable the cut should be made pro rata over the succeeding 12 months, but the program should remain unchanged except as to the target date for completion.

"Such programing and budgeting necessitate a predetermination by top management of the state of maintenance at which it is desired to keep the property. By programing over a long-range period and avoiding radical deviations from the budget by equalization over 12 months, confusion, and waste attendant on violent fluctuations of the maintenance level are avoided.

"I have the firm conviction that it is possible for any railroad to plan its maintenance activities a number of years in advance and to stick to this plan in detail. The only variable really necessary is the rate of accomplishment of the plan."

(Continued from page 31)
ing on traffic. Of course, if a serious emergency occurred, such as total paralysis of business by reason of a strike, any kind of a budget would have to be upset."

Mr. Phillips points out that this type of programing makes it possible for the maintenance forces to prepare a detailed book chart listing all operations and the dates on which they will be started and finished. "We adhere to it as one would the Bible," he says. "I can hardly recall when a budget has been changed after once having been decided upon."

Schedule Is Long-Term

Officers of the D&H, where a similar method of programing is used, are equally convinced of its merits. "One of the greatest advantages to establishing a yearly maintence program," says J. P. Hiltz, Jr., vice-president operations and maintenance, "is that which accrues from being able to schedule, in advance, the use of labor, material, machinery, and services. By so doing, inefficiencies are reduced to a minimum and utilization is raised to a maximum. Further, the various operations follow in a planned sequence, and thus maximun effectiveness of each operation is attained without encountering destructive duplication of effort.

"This type of scheduling *cannot* be carried out on a month-to-month basis. There is too long a period involved in scheduling services, making equipment available, assembling personnel and delivering material to turn these operations on and off at the whim of minor traffic fluctuations without encountering waste.

"Except in rare instances, our traffic forecasts should be sufficiently accurate to allow the establishment and preservation of a yearly budget to accommodate basic maintenance items. The total yearly budget can be increased or decreased with traffic fluctuations and income tax considerations by varying the program to increase or decrease the amount of nonbasic or 'desirable but not essential' items."

This opinion is based on the premise that "it is possible . . . to determine, for a given period, the quantities of the various types of maintenance necessary to properly perpetuate a railroad property. These quantities, of course, will vary slightly with traffic fluctuations, but for practical purposes, unless traffic fluctuations are extremely severe, they will remain constant. Unless this amount of maintenance is performed in each period, a railroad management deceives its stockholders, the people who depend on the railroad for service or a livelihood, and itself."

(Continued on page 50)

Railroading After Hours with Jim Lynch

OPERATIONS RESEARCH—I note that the pro and con on so-called "operations research" is thoroughly examined in a recent report by Dean L. C. Lockley of UCLA, published by the National Industrial Conference Board (available only to member companies).

The dean believes the "formidable jargon" invented by the "more ardent operations researchers" has alienated a lot of people whose cooperation the researchers could use. He notes that these researchers often convey their ideas in mathematical terms, when ordinary English would serve better. Still, he believes the process makes a "unique and original contribution" in that it provides a series of alternative answers to business problems.

All in all, it appears that a little more humility on the part of the operations analysts might win them wider acceptance. The report lists quite an array of companies which have used operations research—including a couple of big railroads. The procedure has been successfully employed in analysis of yard operations, car distribution, and in contriving a rail-replacement program.

YARD MOVIE—I've just had a look at a new SP film —"Railroading by Radar," which portrays the operation of Englewood Yard at Houston. It is as informative and attractive a job on the operation of a modern yard as anything I've ever seen.

RAILROAD SLUMS—When the railroads operated a lot of steam locomotives, they were not always "good neighbors" to adjacent homeowners—with the result that many towns and cities turned their backsides (so to speak) to the railroad. There's no longer any excuse for people making a slum out of a railroad neighborhood, but the pattern persists in too many places. Couldn't members of the local garden clubs, or civic officials, be persuaded to correct this condition, if railroad people would call it dramatically to their attention?

There are some proud communities in this country which—from the viewpoint of railroad riders—are displaying themselves as little better than garbage dumps. I wouldn't want to start printing the names of towns which are conspicuous offenders—but I am gradually collecting a list of them.

Are there any noteworthy places where railroads have succeeded in enlisting the cooperation of local people to correct this unsightly and depressing condition?

WHERE BUSINESS IS GOOD—I was looking at Smith, Barney & Co.'s "Railroad Bulletin No. 236" and saw a list comparing 1956 revenues of individual railroads with the 1947-49 averages. Of 54 roads listed, there were 18 which showed a revenue increase of 25 per cent or more above that of the earlier years. Eleven of the 18 had larger net income (before taxes) in 1956 than in 1950. It isn't easy to keep railroad business and income trending upward—in these days of rugged competition and inflationary costs—but it is an encouraging harbinger to note that some companies are succeeding in doing it.

Chairman Charles Baxter of the Freight Traffic Committee of the Central Territory Railroads comes along with another meaning for "schedule" (besides a timetable and an agreement with a union). This third meaning is that of a tariff—referred to in the Interstate Commerce Act as "schedules of rates and charges." Looks to me as though this one word is getting quite a work-out.

HOW ARE THEY DOING? ... ON THE LONG ISLAND?

Getting Close to the People

Like a pair of tired old feet, the Long Island has spent a lot of time in hot water.

Time-honored target of all comedians, ready stimulant for letter-to-editor writers, and favorite excuse for tardy New Yorkers, the "route of the dashing commuter" is moving cautiously into a new era. You wouldn't call it a time of prosperity, though; it's sort of a state of optimistic peril.

Out of bankruptcy and in the black two years running (on time), revenues inching up, public sentiment softening, physical plant and passenger equipment whipped into the best shape ever, the Long Island still moves on thin, if hardening, ice.

Passengers Have to Pay

The road's basic problem is that it gets three-fourths of its money from passenger operations—and two-thirds of that is in rush-hour commutation service. LI freight business has only limited potential. The territory lacks the heavy industry that could boom traffic and Long Island's many farmers move their produce by truck.

The road's delicate financial balance is pointed up by two things: Federal income taxes are no worry—there's never any net left to tax; and, every time costs go up (as they have for the last two years) the road must boost ticket prices.

The alternatives to such fare hikes are for the road to abandon its major rehabilitation program or to slump back into bankruptcy.

Operating under a unique New York State law that requires it to meet costs, the Long Island can up its fares whenever income doesn't match expenses. The State Public Service Commission may review the fares *after* they go into effect but can't order them rescinded unless it's proved the accounting is faulty or expenditures are not justifiable.

Grueling public grillings have been directed at the Long Island's president and general manager, Thomas M. Goodfellow, following each fare boost. Each time, though, he's shown, the railroad needed the money.

Passed in 1954 and fixing a 12-year redevelopment period, the law coupled with this fare freedom a system of tax forgiveness from state and local Long Island governments. This has cut the road's tax burden in half at an annual saving of $2¼ million.

Equally important is the agreement of the parent Pennsylvania to forego any return on its $120 million investment in the LIRR for 10 more years. The PRR, which advanced $5.5 million to the Long Island for the purchase of new cars, does collect on this, with normal interest—but that and rentals are all it gets.

Mr. Goodfellow, a PRR officer before accepting "assignment—Jamaica" in 1954, stoutly defends its contracts with the "elongated subway."

If anything, he contends, the Pennsylvania is the loser—particularly in LIRR use of tunnels, trackage, personnel and other facilities at New York's Pennsylvania Station.

What's the Long Island's future? By 1960, all of its passenger fleet will be quite new or modernized. The road bought 222 air-conditioned coaches for $24.4 million in 1955 and is spending $21.5 million to rehabilitate older equipment. The road's non-electric lines are 100% dieselized and $14 million is being spent on electrical substations, shops, roadbed and freight terminals.

The 1956 nickel-a-ride fare boost jumped passenger income from $44.7 million in 1955 to $48.2 million, and it's hoped the 5.4% hike of last January will produce a corresponding rise this year. Freight revenues were up almost $900,000 to $14.1 million. Intensified freight solicitation and freight rate increases should raise this too.

Even as the road goes ahead with its programs to collect more money and to make its plant and operations more sound, it is involved in still another sweeping program, an ambitious campaign to win the public's confidence and favor.

It's felt that in this sort of effort Mr. Goodfellow is especially effective because his railroading and financial abilities blend with a warm, gracious personality. He's naturally receptive to new approaches and automatically is suspicious of anything defended just because "it's always been done that way." Moreover, Mr. Goodfellow believes it's part of his job to carry the road's story to the people.

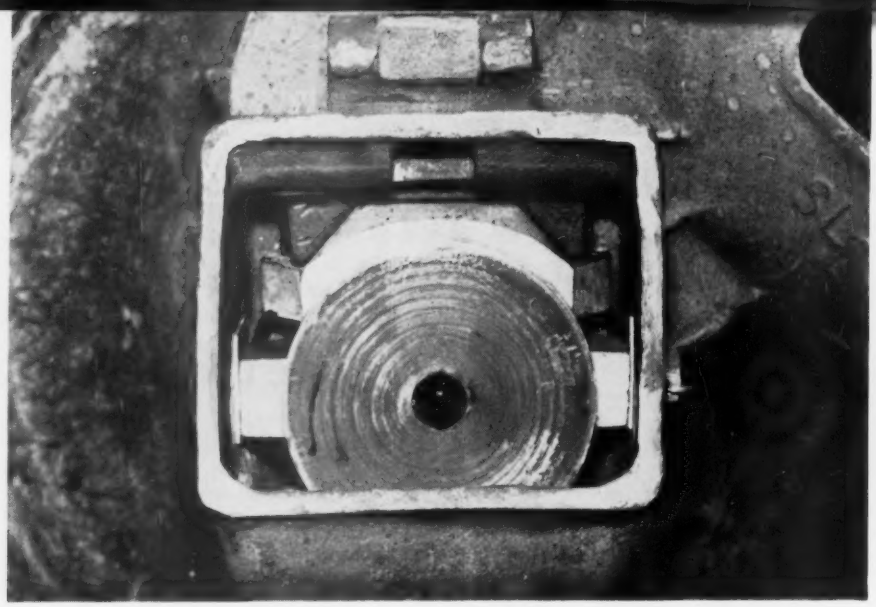
Public esteem of the Long Island plunged pit deep in 1950 after two tragic commuter train accidents. An attitude developed that was harder to counter than any ill will late arrivals could ever create.

Winning New Friends

Widespread involvement of the public is the present management's approach to this tough hurdle. Starting point was the dramatization of the new passenger fleet and revamped stations. Then new friends were won by calling attention to extensive grade-crossing projects, installation of train-regulating safety devices and overall plant improvement.

Public relations ideas like letting 1,500 commuters ride diesel cabs, inviting communities to pick their own color schemes for redecorated stations, and possible formation of a sort of "booster" club, all get enthusiastic management backing. And it pays off. After the Christmastime announcement of the last fare rise, considerable fuss was made in some quarters—but Mr. Goodfellow got just seven letters of protest from riders.

He's hoping for similar results as he moves now into another delicate situation—consolidation of little-used stations. Here too, he's starting with the people, soliciting their support.



JOURNAL STOPS are bolted at each side of the journal. In this position they are designed to prevent axle movements which would displace the bearing, and also they act as packing or lubricator retainers.

FRISCO GETS EVIDENCE . . .

Journal Stops Cut Hot Box Rate

Journal Performance of Freight Cars
WITH R-S STOPS AND WASTE ROLLS . . .

Number of Cars	Type	Months of Service	Car Months
700	Box, 50-ft 6-in.	13.75	9,625
625	Box, 40-ft 6-in.	10.50	6,825
200	Gondola, 65-ft 6-in.	8.50	1,700
100	Box, DF, 50-ft 6-in.	35.50	3,550
	TOTAL TO MARCH 16, 1957		*21,700*

Performance in Interchange on Foreign Lines

SLSF 7082 (Box)—New bearing applied to L-1. June 2, 1954.

SLSF 7003 (Box)—Wheels changed out on "A" end which was slid flat. Bearings renewed per Rule 62. December 8, 1954.

SLSF 7069 (Box)—Wheels changed out "A" and "B" ends account built-up tread. Bearings renewed per Rule 62. May 31, 1955.

SLSF 7031 (Box)—Wheels changed out at No. 3 location account cut journal. February 14, 1955.

SLSF 7026 (Box)—Boxes repacked. New bearing applied to R-2. October 7, 1955.

SLSF 7039 (Box)—Boxes repacked. One bearing renewed (location not recorded). November 1, 1955.

SLSF 7158 (Box)—Two bearings renewed (location not recorded). February 4, 1956.

SLSF 7095 (Box)—Boxes repacked. Bearings L-1, R-1, R-2, and R-3 renewed. February 16, 1956.

SLSF 18762 (Box)—Four pairs wheels changed account built-up tread. Eight bearings renewed per Rule 62.

R-S journal stops and roll-type waste packing on 1,650 Frisco freight cars have given 21,700 months of service without a hot box on home rails.

"A good record," a Frisco officer says. "Considering the classification and newness of the cars, it is reasonable to assume their mileage is well above the national average for active cars." Using the national average of 48.7 miles per day for active cars for 1955, car-miles will total 32 million. This confirms the Frisco management's belief in the efficiency of the combination of journal stops and roll-type waste packing. Additional journal stop applications will be made this year to 2,380 Frisco cars. At the end of the year, about 20 per cent of the road's car fleet will be equipped with journal stops.

In May 1953, the first inspection of journal bearings on a number of R-S journal-stop-equipped captive cars was made by members of the AAR lubrication committee and a representative of the AAR research center at Monett, Mo. Inspection of the bearings was supplemented with impact and braking tests. Authority was then granted to equip a limited number of cars with journal stops for movement in interchange service.

The first such applications were made to one hundred 50-ft DF-loader box cars built early in 1954. Continued favorable experience led to journal stops being specified for 1,800 cars with solid bearings built in 1956. The 100 original cars and 1,550 cars built in 1956 were packed with waste rolls. The performance of the journal bearings on these cars while on foreign lines has been judged on the basis of foreign line billing.

The Frisco has equipped 397 standard, bulkhead and pulpwood flat cars with journal stops. It also has them on 130 tank cars, 11 ballast cars and 80 covered hoppers. Installations on 401 other covered hoppers has been authorized. All have been on existing cars. The Frisco is under way with a 1957 program which anticipates journal stop applications on 1,980 cars scheduled to be built this year.

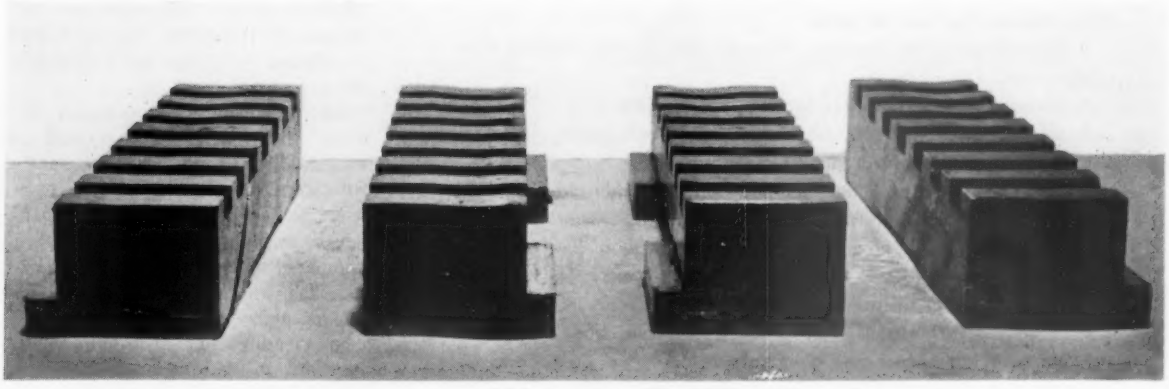
TRUCK without journal stops on this ballast car had bearings and wedges in such condition that bearings were replaced when inspection was made after first eleven months of service.

WHEEL FLANGES (left) on ballast car truck equipped with journal stops after 63 months of continuous service were in good condition. The other truck of the car retained the standard arrangement to permit comparisons.

1,980 Cars to Be Built in 1957 Equipped with Journal Stops . . .

Number of Cars	Type
100	Flat, 53-ft 6-in.
700	Box, 40-ft 6-in.
180	Box, 50-ft 6-in.
400	Gondola, 70-ton 52-ft 6-in.
100	Pulpwood, 70-ton
500	Hopper, 50-ton

JOURNAL BEARINGS and wedges on ballast car truck with R-S stops were in condition, after 63 months of operation, that allowed the bearings to be reapplied and continued in service.



R-S JOURNAL STOP wear pattern after 63 months of service in the R-3 and R-4 positions on the ballast car was slight, and approximate depth at the back of the combs was 1/32-in.

WINNERS in JOSEPH T. SMALL ESSAY CONTEST

Contest: WHAT OWNERSHIP AND/OR DISTRIBUTION . . . TO PROVIDE MORE CARS?

Winner: SET UP A POOL; MODIFY PER DIEM

By E. L. TENNYSON
Consulting Engineer, Philadelphia

Although the present system of freight car ownership works in the routine administrative sense, there are at least two major faults in it. Car ownership is not sufficiently encouraged to provide new cars as soon as needed, and per diem is inequitable to all concerned including many using railroads.

Some railroads can carry cars quickly free of any per diem, while others must pay several days for a short and expensive haul. So long as the car fleet suffers because of these reasons, or any other reasons, the railroads are going to suffer more than the shippers because shippers have other sources of transportation whereas railroads have no other source of revenues.

Because the twin faults of inadequate incentive and unfair rentals are of such major proportions, it will be assumed that for all practical purposes, the present per diem system is inadequate and in need of immediate correction.

Studies of the Interstate Commerce Commission indicated that the proper per diem rate (as of the date of study) is about $2.10. While there was nothing wrong with the methods used to determine this figure, it admittedly was nothing but an average —based upon all types of cars of all ages in all types of freight service. Therein lies its fault.

Averages are most unfair and unrealistic for specific applications, unless the application is a broad as the data collected. An average price for all cars will never compensate the purchaser of new cars in inflationary times. At the same time, an average price is not fair to the terminal carrier who has no possibility of owning cars under the rules, yet must pay several days per diem on an obsolete car for a short haul.

These basic inequities for both owners and users have caused serious dissention between car-owning railroads and smaller terminating carriers that do not need their own cars because they terminate more than they originate, but believe they have to pay too much for the use of old cars that come to them. Both groups of roads are sincere and correct in their claims of inequity, as it affects themselves.

Since the faults of the system lie in the use of averages, the most obvious correction lies in the use of more specific and more accurate data, but this would mean a different per diem rate for each freight car. This has been suggested by the small terminal carriers, but is obviously impractical at present without universal automatic electronic per diem billing machines.

Therefore, the best solution for the problem seems to lie in the use of a pool of cars large and homogenous enough to justify the use of averages. Since there is already provision in the rules for payment for private car movements, it does not appear at all difficult to solve the problem before us.

In addition to the financial problem, any attempt at improving the car supply should also consider the solution of such problems as the unwillingness of a car owner to invest in better designed equipment because his increased investment will spend most of its time away from home to some one else's benefit. The problem of low utilization of cars because of the empty journey homewardbound must also be included in the overall solution.

There appears to be no reason why all of these problems could not be solved through the creation of a freight car owning company in some ways similar to the Pullman Company which owns passenger cars. Such a company with all new cars should establish a method of pricing that would make it self-supporting and easy to administer. It would not be involved in the cross-problems that inhibit individual railroads when they consider new cars.

TENNYSON TELLS, "How a Pool Could Help Car Supply"

A simply organized corporation owning modern cars without a "home" can solve most car supply problems, including the following:

1. Financing of new cars, without jeopardy to other capital programs.
2. Justification for the more expensive modern cars that can earn more revenue, but not at home.
3. Elimination of the free use of freight cars by fast working short bridge lines.
4. Reductions in car rentals for terminal carriers.
5. Elimination of deadheading empty cars back home.
6. Stabilizing the output of car manufacturers.

All that is necessary is the incorporation of a railroad subsidiary corporation similar to the passenger car owning Pullman Company, with such corporation having the right to charge a low per diem rate plus a mileage rate sufficient to insure its solvency. This arrangement would end for all normal times (if there ever are normal times) the chronic car shortages that occur and recur, and the parties battling over the proper per diem rate could make peace and get down to the business of supplying transportation. With a financial incentive every effort will be made to solve the car supply problem.

THE WINNERS RECEIVE THEIR CHECKS

Cash prizes (two of $1,000 each and two of $250) have been presented to the four winners in the Joseph T. Small Contest. Administered by Railway Age, the contest elicited discussion of two important aspects of the railroad freight car supply—(1) a system of ownership and distribution and (2) development of a modern car of high traffic appeal. Prize money was donated by Mr. Small, nationally known analyst of railroad securities and an associate of Paine, Webber, Jackson & Curtis. The two first-prize papers in each contest are presented here.

GLEN D. LARSEN (right), $1,000, from R. S. Macfarlane, president, Northern Pacific.

J. T. MUSTENICH (left), $250, from T. A. Fante, assistant manager, Freight Protection, Merchandise & Station Service, SP.

E. L. TENNYSON (left), $1,000 from Ralph C. Champlin, vice-president public relations, Pennsylvania.

R. C. WAEHNER (left), $250, from H. C. Schmidt, vice-president—traffic, Lackawanna.

Each railroad, large or small, as well as equipment manufacturers tired of high-cost boom or burst conditions who are dissatisfied with the present arrangement should diligently pursue the incorporation of a Railroad Freight Car Corporation (RFCX), to be financed 20% by the stock purchases of the incorporators, and 80% by the sale of guaranteed equipment trust certificates. Obviously, the per diem rate now in effect would pay for these cars only with difficulty, and certainly not with sufficient security to satisfy the purchasers of the equipment certificates. To overcome this problem, yet still be fair to the terminal carriers, there must be a combination of a low per diem rate with a suplementary mileage rate to penalize delay without penalizing terminal carriers.

Since the interest and amortization of a new high quality freight car will require $1.80 per day allowance for maintenance, it would seem most logical and equitable to set the per diem rate for RFCX cars at $1.80 plus two cents per mile, subject to any periodic adjustment necessary to earn a 6% dividend for the owners of Railroad Freight Car Corporation stock. The lower per diem rate on these cars would present no serious problem for accountants, who would quickly learn that all RFCX cars took a $1.80 rate, and they are already busy figuring mileage rates on other private cars.

The need for computing both per diem and mileage can best be demonstrated by considering a fast bridge

COST DATA ON CARS

Cost of modern fully equipped freight car	$10,000
Average annual interest over life of car (4%)	$208
Annual depreciation on car	$400
Average annual cost of repairs	$300
Total cost of car ownership per annum	$908
Total cost per day	$2.50
Additional cost to make 6% return on stock, with proposed debt ratio.	.07
Total cost per day of debt interest and depreciation only	$1.67
Annual cost of freight train car repairs	$500,000,000
Number of freight car miles annually	30,000,000,000
Cost per freight car mile	1.67¢

A MILEAGE RATE OF 2¢ PER MILE IN ADDITION TO $1.80 PER DIEM WOULD INSURE THE FINANCIAL SUCCESS OF A RAILROAD FREIGHT CAR CORPORATION.

line which has it within its power to move cars before midnight to a connecting carrier and pay nothing for their use, whereas a terminal yard may have a car five days for a mile haul, with no demurrage applicable, particularly if a weekend intervenes as it does 28% of the week.

It is not contemplated that the Railroad Freight Car Corporation would establish shops, yards and other service facilities, other than an accounting office and inspectors to insure proper maintenance by connecting carriers. Thus RFCX cars would have no "home." Having no home they could be loaded in any direction whenever they became empty. Their utilization should therefore rise 50% or more over other standard railroad owned freight cars, giving shippers the benefits of higher utilization of better cars and the carriers the benefit of lower maintenance costs through newer cars.

In times of car shortage, it would be possible to increase the car fleet with no difficulty, simply by adding the proper type of cars to the RFCX fleet. In times of surplus, the Railroad Freight Car Corporation cars having no home, would keep busy, while obsolete carrier owned cars would be put in the pasture on storage tracks.

So long as there remained a substantial fleet of carrier owned cars, the lack of a home for RFCX cars would constitute no problem. In the event that the Railroad Freight Car Corporation were as successful as it surely would be, a home would some day be required, but it could not possibly be needed during the first ten years of operation. If eventually necessary, when the RFCX fleet exceeded the total national demand for cars, centrally located "homes" would have to be established, but many years of successful experience would have been accumulated by that time. Rather than create a home for RFCX cars, the oldest cars could be sold to individual carriers at a fully depreciated price, so that the size of the RFCX fleet would never be so great as to cause idleness among RFCX cars.

To prevent hardship on car owning railroads, it might be necessary to specify that RFCX cars could be purchased for interchange service only when the Car Service Division of the Association of American Railroads certified that shortages for a particular type of car existed, or when 51% or more of the car owners agreed that more cars were necessary.

Financing should be so simple as to be of no concern. In order to purchase 10,000 cars, only $20,000,000 worth of stock need be sold to interested railroads and car builders, with no more than $2,000,000 necessary from the largest carrier. Car builders particularly should be anxious to join in such a corporation because it would tend to stabilize their business. Banks would find the bulk of the financing an excellent risk, as equipment trusts have always been a good risk and Railroad Freight Car Corporation profits would be guaranteed because rentals would go on day after day without ceasing. The parents of the Railroad Freight Car Corporation could also co-sign the mortgages.

Contest: WHAT DESIGN OF CAR...FOR HIGH TRAFFIC APPEAL?

Winner: A SINGLE-SHEATHED, ALL-STEEL BOX CAR

By GLEN D. LARSEN
Draftsman, Northern Pacific

Inasmuch as the faithful box car has the distinction of being the universal carrier on the railroads, it deserves particular attention when thought is given to improvement of equipment on an engineering or economy basis.

More changes have been effected in box car design in the past ten years than in almost all other types of freight cars combined, not counting the specialized equipment provided at extra cost to meet the various shippers' needs.

Why is this? It is apparent that the box car is yet undergoing a metamorphosis from a half-wood car of the single sheathed type to an all steel, all welded type of car. This change has been carried on rather slowly for a decade or so.

We have now progressed to the point where box cars have steel floors, steel end lining and finally steel side lining. Some of the steel side linings extend to only six feet or so above the floor with wood covering the remainder. Other arrangements have the entire side lining of steel. Invariably the steel is covered with a plastic or rubber type coating or sheeting to protect the lining from abrasion.

In any event, the construction of the car side remains essentially the same as it was with wood lining. The common three-inch "Z" post is retained with one-eighth inch steel outside sheathing and steel lining of various thicknesses on the inside.

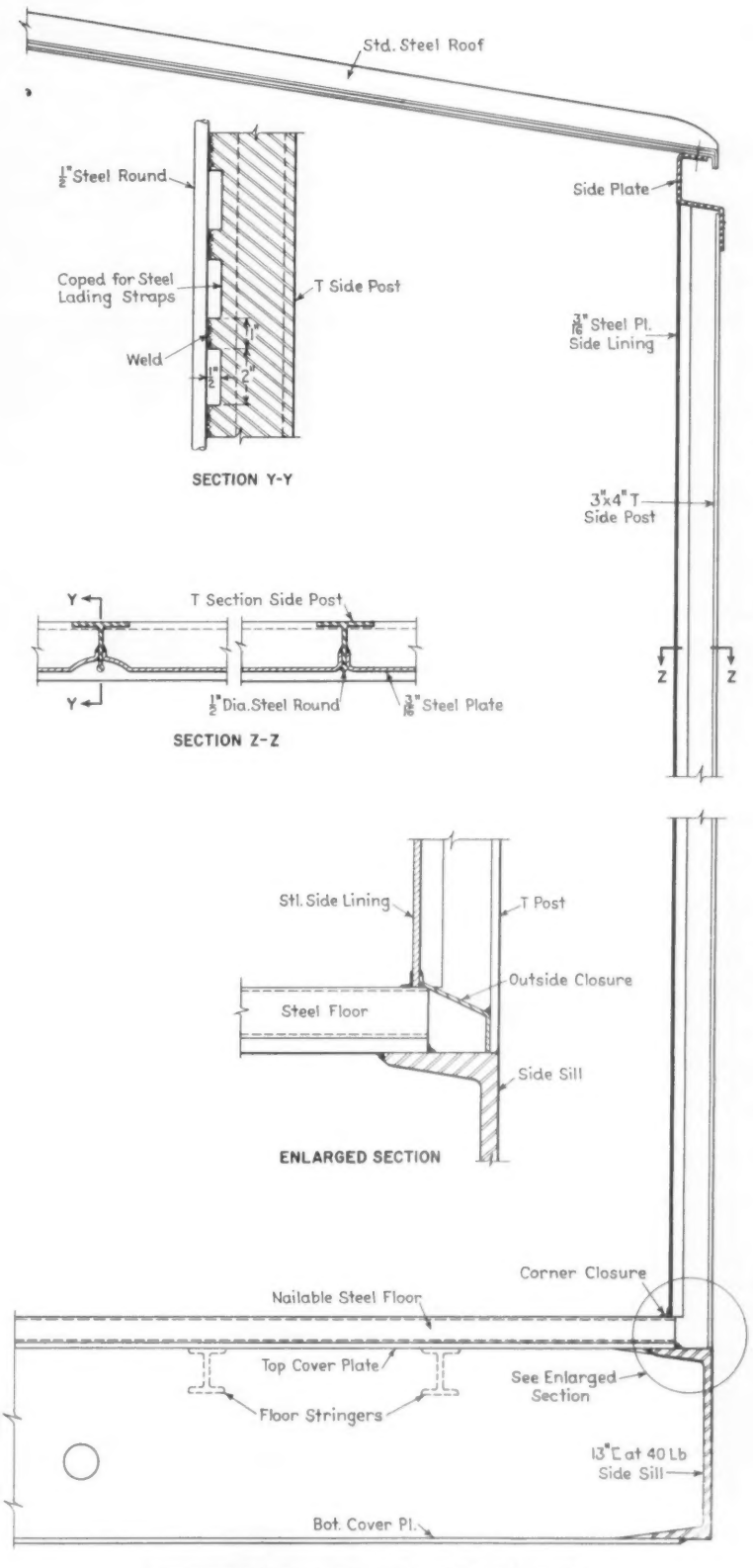
The proposed arrangement illustrated shows an entirely new approach to the design and fabrication of the sides for a standard box car. It will be noted that **the outside sheathing has been omitted.** The all steel lining is applied in such a manner that it serves as the inside lining as well as the outside sheathing. A reasonably smooth coating of insulating cement should be sprayed on the outside of the car, before painting, to control condensation.

Strength and Economy

A unique feature of the design is the lading strap anchors which are incorporated integral with the posts. This arrangement provides maximum strength as well as simple and economical manufacturing. The sheets are bumped on the inside to allow clearance groves for the steel lading straps. Note should also be taken of the novel arrangement of the side sill connection. Of late years, great emphasis has been placed on the excessive breakage of side sills with the consequent introduction of various types of reinforcements. Many of these reinforcements have reached strength proportions to the extent that there is little need for the side sill. A large portion of the side sill angles' strength is lost in the cope at the doorway. Equivalent usable strength can easily be added to the side sill reinforcements, with a substantial saving in weight, to compensate for the loss of the side sill angle. The side post connection at the side sill as illustrated can easily be made by welding.

These simple improvements in design would not only provide for increased economy in manufacture for the car builder but would also provide the shipper with a car that is easily cleaned for almost any class of loadings. There would be practically no interior maintenance in a car of this type.

It is, in my opinion, simple, effective designs such as these that can be utilized readily by railroads and car builders to improve the net earning power of their freight equipment.



SECTION AT CROSSBEARER

HIGHLIGHTS FROM ANNUAL REPORTS OF 36 RAILROADS①

Railroad		Operating Revenues	Operating Expenses	Fixed Charges	Net Income	Current Assets*	Current Liabilities*	Long Term Debt*
Ann Arbor	1956	$ 9,755,712	$ 7,792,199	$ 230,367	$ 633,068	$ 4,367,222	$ 1,198,721	$ 5,865,832
	1955	9,323,481	7,434,272	223,843	847,363	3,989,979	958,914	5,620,032
Atlantic & Danville	1956	1,909,870	1,380,320	88,482	4,952	385,505	537,234	3,040,244
	1955	1,651,135	1,247,225	84,902	64,312d	400,902	425,022	3,142,613
Bangor & Aroostook	1956	15,800,640	12,120,380	804,923	1,528,324	4,719,274	2,965,128	25,045,955
	1955	13,309,640	10,573,625	906,916	1,156,086	4,866,823	2,270,212	27,601,419
Bessemer & Lake Erie	1956	26,203,270	20,074,573	434,138	5,364,928	19,556,771	10,790,185	14,177,831
	1955	26,651,160	17,998,535	476,107	6,510,293	16,697,327	10,680,113	15,515,631
Boston & Maine	1956	88,038,520	70,736,517	3,541,446	741,225	31,221,123	23,606,436	99,423,994
	1955	85,906,610	65,729,574	3,206,089	3,322,667	30,906,030	21,263,889	90,492,886
Canadian Pacific	1956	505,262,393	463,926,566	15,752,302	55,617,988	225,007,239	110,926,693	156,085,000
	1955	448,361,441**	411,233,650**	16,188,820	44,032,465	207,285,945	89,795,283	169,651,000
Chicago Great Western	1956	35,626,656	24,370,543	969,021	3,403,217	12,303,762	8,482,937	27,933,051
	1955	34,487,222	22,985,789	975,592	3,244,013	12,176,161	8,523,710	28,544,519
Chicago, Milwaukee, St. Paul & Pacific	1956	253,860,566	210,746,299	4,716,551	8,485,914	87,835,685	48,244,605	274,132,980
	1955	245,498,210	204,641,342	4,696,191	9,532,282	89,685,070	50,376,966	277,312,107
Chicago, Rock Island & Pacific	1956	200,020,420	153,408,008	3,006,469	15,721,819	60,334,466	40,936,608	150,523,931
	1955	189,381,739	143,207,475	3,969,100	16,988,157	64,609,357	40,739,426	156,826,392
Chicago, St. Paul, Minneapolis & Omaha	1956	32,568,399	27,446,656	2,456,545	3,163,284d	8,232,603	51,553,555	50,538,199
	1955	33,307,572	28,118,498	2,481,504	3,109,624d	4,858,493†	48,345,766†	51,530,093†
Chicago & Eastern Illinois	1956	37,630,504	29,145,741	1,048,538	2,277,721	9,412,117	7,082,694	48,771,702
	1955	34,454,906	27,396,632	1,073,180	1,579,846	7,465,949	5,681,434	49,571,696
Detroit & Mackinac	1956	2,533,880	1,799,421	56,232	342,821	871,055	770,103	1,313,700
	1955	2,202,067	1,521,477	62,077	306,173	768,548	648,831	1,569,610
Detroit, Toledo & Ironton	1956	20,775,474	13,676,377	454,273	4,339,942	7,813,166	4,820,767	14,970,000
	1955	21,039,176	13,302,612	451,071	6,286,997	7,794,563	3,401,021	15,122,657
Duluth, Missabe & Iron Range	1956	47,034,630	33,549,046	350,552	5,867,606	17,917,748	14,391,250	10,603,359
	1955	52,280,337	29,869,965	448,116	9,730,790	19,684,323	17,904,382	14,168,590
International of Central America	1956	17,303,949	13,915,607	222,413	1,650,538	7,281,967	3,416,281	3,554,541
	1955	16,656,764	13,309,125	240,901	1,663,024	8,009,172	1,621,421	6,023,907
Jersey Central Lines	1956	62,876,614	49,673,404	4,306,575	1,131,710	16,863,300	9,529,871	59,196,421
	1955	58,314,048	46,143,727	4,431,898	1,020,866	16,086,427†	8,275,090†	62,263,622
Kansas City Southern	1956	47,007,789	27,015,429	1,835,930	6,440,941	19,096,960	13,651,321	59,614,578
	1955	45,585,191	25,840,753	1,834,826	6,504,438	22,067,090	15,301,465	59,032,580
Louisiana & Arkansas	1956	28,180,555	16,944,481	634,619	5,149,751	18,641,264	7,078,859	19,887,142
	1955	28,497,951	15,602,222	719,655	5,635,076	19,011,931	8,540,346	19,409,074
Louisville & Nashville	1956	212,397,927	168,063,070	9,031,425	25,026,613	91,503,882	32,770,727	267,012,336
	1955	181,206,433	140,756,231	9,028,676	24,637,846	80,787,784	29,659,967	266,365,481
Minneapolis & St. Louis	1956	21,260,864	16,608,639	226,217	1,833,462	4,460,117	5,469,461	5,155,468
	1955	20,940,709	16,433,716	241,936	1,829,331	6,215,367	5,401,445	5,881,935
Minneapolis, St. Paul & Sault Ste. Marie	1956	47,991,013	37,612,524	302,582	2,839,161	21,803,338	14,425,503	31,688,324
	1955	41,615,779	33,079,561	299,530	2,411,496	21,098,843	12,072,281	29,662,964
Monon	1956	22,680,773	18,206,096	199,222	948,233	7,195,487	5,577,829	18,746,006
	1955	22,312,880	17,028,779	224,180	1,391,857	6,900,305	4,644,323	19 846 600
New York Central	1956	780,434,916	633,643,256	44,984,686	39,104,259	190,422,110	125,179,500	789,725,558
	1955	762,666,356	603,721,215	45,774,381†	52,283,814	211,656,000	143,051,815	809,102,678
New York, New Haven & Hartford	1956	162,450,211	131 813,650	6,890,913	261,704	35,623 307	35,082,721	212,267,957
	1955	155,118,869	127,036,004**	6,386,986	4,246,534	40,560,567	37,708,288	154,203,400
Norfolk Southern	1956	10,689,488	8,380,674	266,508	613,786	3,071,329	1,833,326	5,413,089
	1955	10,282,400	7,936,460	272,255	616,584	3,257,879	1,917,989	5,393,681
Northern Pacific	1956	188,169,812	151,533,846	10,352,611	20,983,445	95,085,112	44,431,030	283,444,928
	1955	183,033,330	144,019,364	10,110,855	19,143,618	94,769,597	46,759,228	278,367,427
Pittsburgh & West Virginia	1956	9,230,152	6,831,344	419,055	948,627	4,150,135	1,907,982	11,925,086
	1955	8,624,862	6,318,518	429,883	873,970	4,409,764	1,854,884	10,962,500
Richmond, Fredericksburg & Potomac	1956	27,130,292	17,512,477	89,970	3,828,539	12,447,040	6,153,052	2,002,419
	1955	26,274,073	17,619,478	107,411	3,331,977	12,784,216	5,966,172	2,768,255
Rutland	1956	5 201,892	4,238,499	36,702	452,816	1,489,185	494,567	1,428,560
	1955	4,811,335	3,957,306	22,578	272,197	1,229,868	483,157	438,176
St. Louis-San Francisco	1956	137,251,430	105,773,065	5,246,919	8,534,044	43,268,892	25,014,749	197,640,148
	1955	133,400,674	100,981,870	4,369,381	10,770,428	57,357,526	27,679,707	161,548,985
St. Louis Southwestern	1956	67,959,489	42,460,701	804,722	11,079,042	40,206,596	14,982,438	23,028,000
	1955	66,952,021	39,404,111	815,481	10,579,386	39,161,141	16,912,576	23,028,000
Spokane International	1956	3,696,740	2,123,124	61,903	511,445	2,142,772	1,502,073	3,748,275
	1955	3,586,245	1,884,884	50,293	600,903	2,503,750	1,496,736	3,960,586
Tennessee Central	1956	5,320,496	3,855,377	312,149	278,069	1,556,906	1,216,015	7,732,626
	1955	5,162,775	3,696,868	318,090	242,256	1,781,101	1,488,014	7,838,519
Texas & Pacific	1956	81,388,881	61,523,517	2,560,404	8,474,004	28,854,199	10,996,543	60,746,341
	1955	81,005,334	57,977,704	2,876,644	9,280,262	35,185,488	14,644,294	67,145,759
Toledo, Peoria & Western	1956	7,560,828	4,665,842	62,963	895,353	3,497,315	1,989,703	1,465,000
	1955	7,033,688	4,410,225	67,331	767,356	3,563,852	2,184,430	1,595,816
Wabash	1956	119,519,719	90,631,394	2,648,767	10,230,028	36,679,997	18,953,107	97,766,266
	1955	118,564,821	86,948,069	2,513,004	15,517,714	38,315,593	17,553,069	92,596,915

①To be supplemented as reports from other roads are received.
*On December 31.
**Restated.
†Adjusted.

ANOTHER CATERPILLAR FIRST!

CERTIFIED POWER

FOR CAT* DIESEL ENGINES

CATERPILLAR TRACTOR CO.

ENGINE POWER CERTIFICATION

This is to certify that the Diesel Engine herein described has been engineered, manufactured and tested in accordance with rigid Caterpillar Standards. The materials and workmanship incorporated into this engine give it the inherent capacity for satisfactory performance when applied in accordance with the power ratings established and recommended by this company. The MAXIMUM OUTPUT capacity of this standard production engine is 200 H.P. @ 2000 R.P.M. equipped with: air cleaner, water pump, lubricating oil pump, fuel pump, and standard intake and exhaust manifolds.

I certify that R. L. Henson, Supervisor of Diesel Engine Test, Caterpillar Tractor Co., [illegible] Certification and I affix my [illegible]

/30/58

R. L. Henson
Supervisor Diesel Engine Test
Caterpillar Tractor Co.
Peoria, Illinois

Caterpillar Model D326 Industrial was manufactured and shipped as follows: Engine Serial No. 39B1018 Shipping Date February 11, 1957

Power Setting 152 H.P. @ 1600 R.P.M. Intermittent Power Rating

Radiator & Fan	Tachometer Drive
Ether Starting Aid	Muffler
32V Charging Generator	Heater Connections
Governor Control	Remote Shut-off

POWER RATINGS

MAXIMUM OUTPUT is the horsepower capacity of the engine, a measure of the maximum power, ± 5% that can be developed for five minutes without drop in speed.

INTERMITTENT HORSEPOWER is a rating for use in variable load applications such as excavators, hoists, and standby power units, where the duration of sustained full power output is one hour or less, with the average output not over 80% of Intermittent Horsepower.

RATED HORSEPOWER is a rating for use in applications such as planing mills, hammer mills, and rock crushers where the duration of sustained full power output is 12 hours or less.

CONTINUOUS HORSEPOWER is a rating for use in applications such as work-boats and pumps where the duration of sustained full power output is 24 hours per day, day in—day out.

Horsepower figures are established in accordance with rigid Caterpillar standards. All ratings, corrected to sea level barometric pressure (29.92 in. Hg.) and standard temperature (60°F), apply to a production engine including air cleaner, water pump, lubricating oil pump, fuel pump and standard intake and exhaust manifolds. The above ratings are based on British and American BHP.

FORM NO. 515-32553

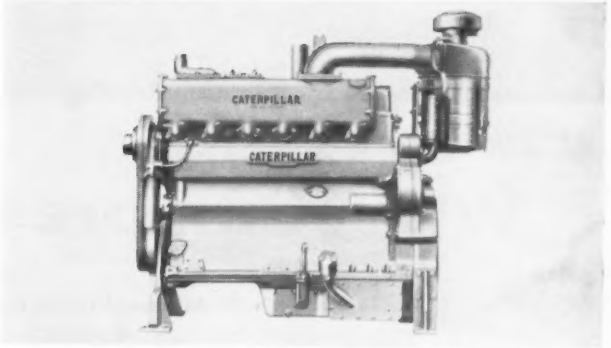
Printed in U.S.A.

In a quarter century of diesel leadership Caterpillar Engines have achieved a reputation for *honestly rated power.* Owners have found that they can depend on a Cat Diesel to deliver the power promised.

Now, to back this reputation, Caterpillar becomes the *first* manufacturer to issue a certificate showing the horsepower capabilities of the engine. This certificate is signed by Caterpillar Tractor Co. and certified by a notary public.

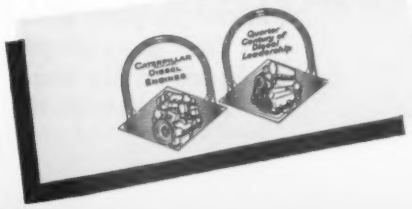
You have a right to demand *certified power* when you invest in an engine. You get it when you buy from your Caterpillar Dealer. Let him show you the certified power plant that fits your needs.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



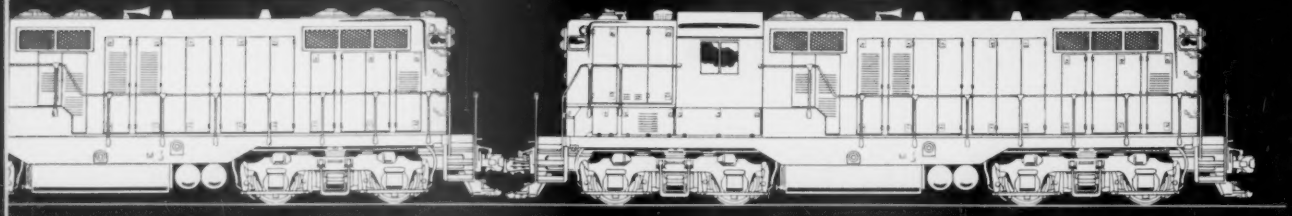
CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.



Forecast: Aluminum Consumption

1957



Will your present motive power

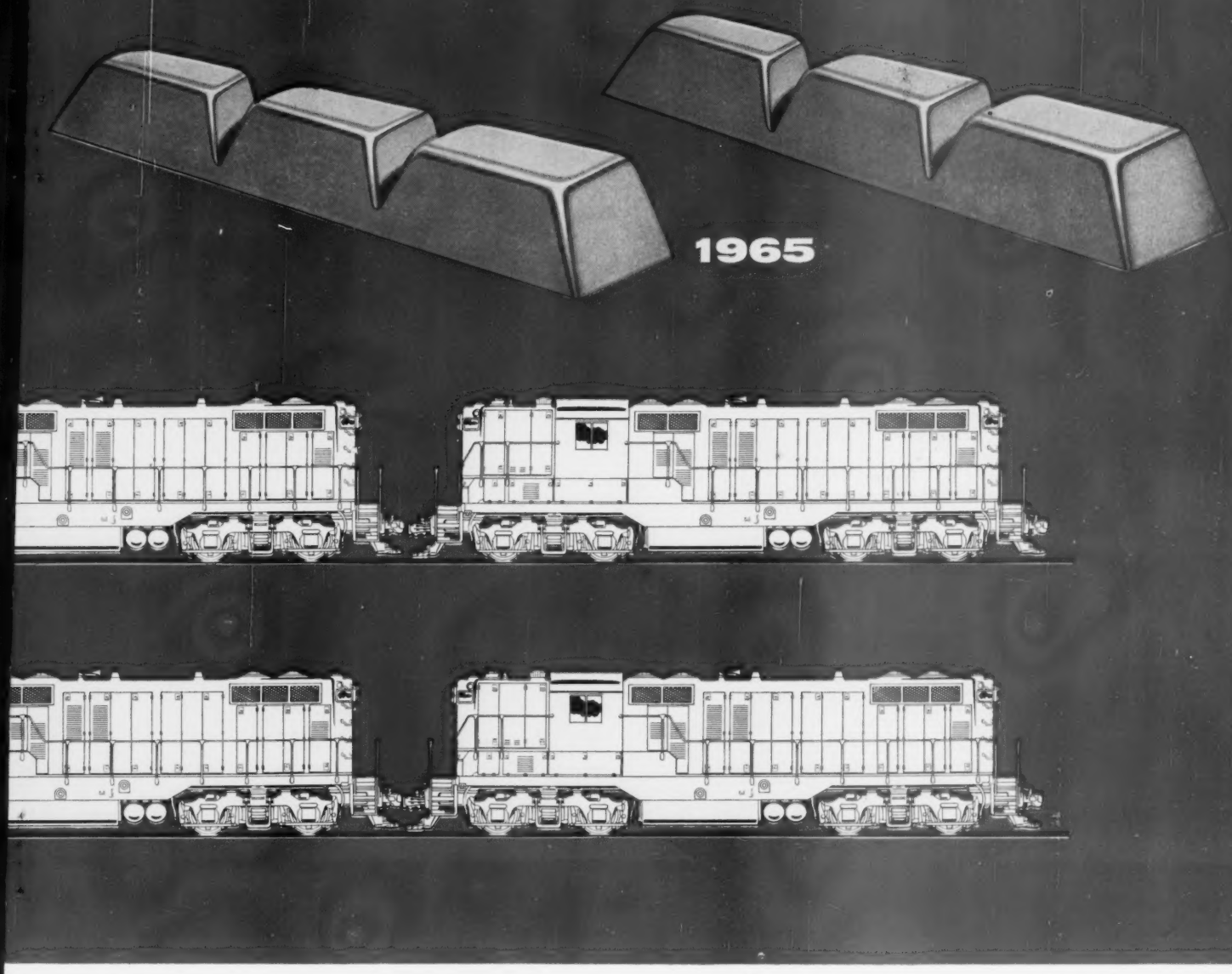
Now is the time to plan for increased traffic, not only for aluminum and aluminum products, but for steel, chemicals, foodstuffs and nearly all other basic products, most of which will exert comparable demands on rail transportation in the growth years ahead.

Electro-Motive is showing its faith in this growth potential through a forty-two per cent expansion of manufacturing facilities. We are now in a better position than ever to plan with you a realistic program of motive-power acquisition and modernization that will *give you power when you need it.*

Through a planned, step-by-step program you will be able to match power to growth conditions as they occur, thus avoid delays costly both in revenue and goodwill.

And Electro-Motive offers the opportunity of anticipating this increasing traffic

*to double by 1965**



* Aluminum producers expect the use of aluminum in such things as buildings, freight cars, automobiles, packages, cans and other new products will double consumption in the United States by 1965.

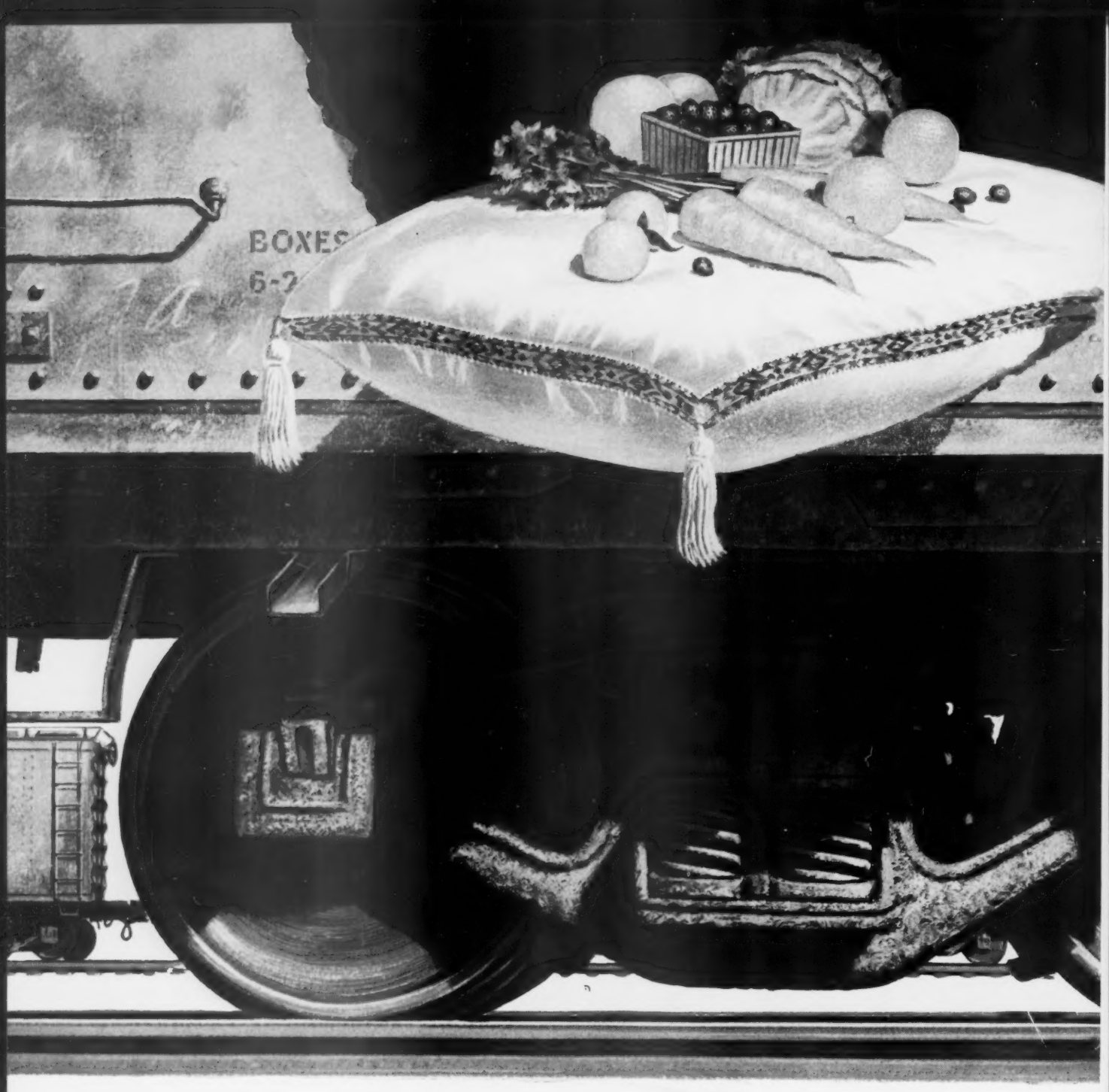
do the job?

with fast, dependable, economical motive power—either from our constantly improving line of General Motors locomotives, or through our modernization facilities that make new locomotives from old.

GENERAL MOTORS LOCOMOTIVES

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS

La Grange, Illinois • Home of the Diesel locomotive
In Canada: General Motors Diesel, Ltd., London, Ontario



On the A.R.T.

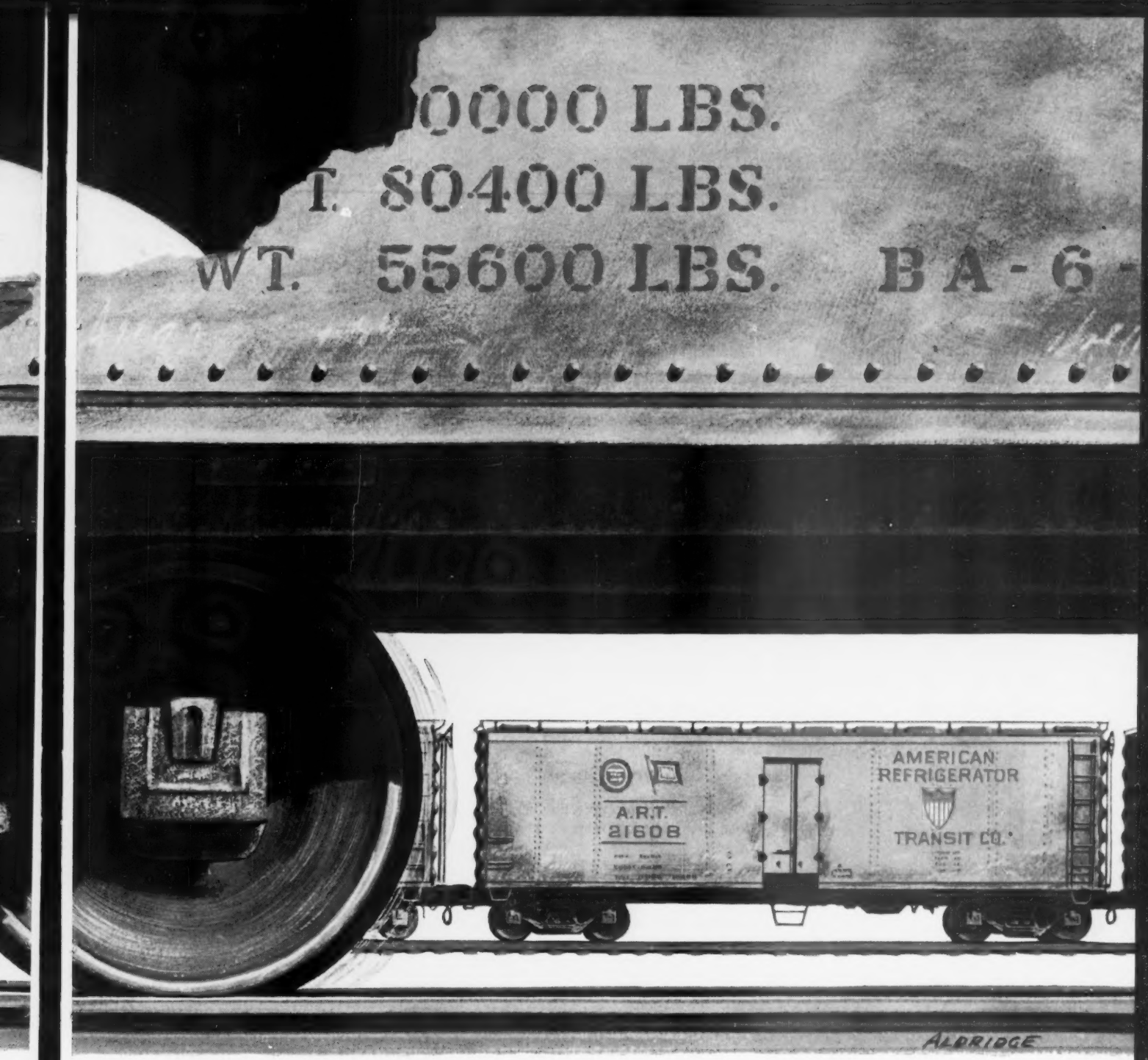
THEY WHET YOUR APPETITE

At any fruit or vegetable counter, the biggest sales-builder of all is the "just-picked" look. That's why the A. R. T. Company has done such a topflight job of providing cars that ride smoothly at higher speeds . . . to bring produce from the orchards and farms to your dinner table safely and quickly.

Is this good service possible only with new cars? Not at all. Older cars—with trucks dating back to the pre-Ride-Control era—are simply brought up to modern riding standards with ASF Ride-Control Packages. Change-over takes only a few minutes and the investment is small—practically nothing, in fact, compared with the way *improved service* retains and *regains* freight revenues.

Safe, prompt arrival of *any* commodity carried on the rails is just as important and desirable as a fresh-looking orange! Further tests on your road will prove how Packages can help you increase *profits* . . . through greater car utilization, better service, fewer damage claims.

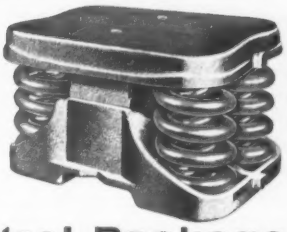
Now is the time to make smooth riding another objective of your general repairs program!



WITH SMOOTH-RIDING CARS!

NOW . . . all ASF Ride-Control Packages are fitted with Extended Life Springs

In appearance, these springs look like any standard truck spring . . . but tests prove they average at least 10 times longer life! Ride-Control Packages offer you a quick answer to smoother riding—and an answer to costly spring failures and replacement.



Bring your older cars up to modern riding standards . . . with

GEARED TO PROGRESS
RPI
REPAIRS

ASF **Ride-Control Packages**

AMERICAN STEEL FOUNDRIES
Prudential Plaza, Chicago 1, Illinois
Canadian Sales: International Equipment Co., Ltd., Montreal 1, Quebec

RAILWAY AGE
The Industry's Newsweekly

WHAT'S NEWS in Products

Special Piggyback Car

. . . takes heavy loads

"Lodapto" is a car specially designed for TOFC service. Though it weighs less than 28,000 lb, it reportedly will handle loads up to almost three times its weight. It will accommodate the largest of today's highway trailers, and because of its low profile, according to the builder, will handle the tallest trailers without creating clearance problems. *ACF Industries, American Car & Foundry Division, Dept. RA, 30 Church St., New York 8* •

Steam Generator

. . . for stationary use

From 60-deg feed water, the Vapor Modulatic steam generator Model 4615 produces 400 to 1,750 lb of steam per hour at 75 to 300 psi. This generator has 99 sq ft of heating surface and is rated at 60 bhp.

Automatic controls cause the steam generator to cycle on and off and change the volume of steam produced to meet a changing steam demand. The servo-water-bypass-control meters the fuel, feed water and combustion air. Working steam pressure is changed from 75 to 300 psi by turning one control.

The 4615 steam generator is 84 in. long, 48 in. wide and 70 in. high. The 337-ft steel coil is designed so that hot gases wipe over and around the loops to transfer heat to the water being pumped through the coils under pressure. A steam separator removes excess moisture. Three burners are available—one for No. 2 fuel oil, one for natural gas, and a combination burner for oil or gas. Fuel may be changed by flipping one switch and without changing any parts.

The protective controls are steam temperature limit, low water cut out, electric eye, safety valve, motor overload cut out, atomizing steam or air combustion switch cutout and excessive water pressure relief valve. The 4615 Modulatic steam generator is a complete package which includes a 3-hp electric motor, blower, feed water pump, steam separator, fuel pump and panel mounted controls all assembled on a steel base. *Vapor Heating Corporation, RA, 80 E. Jackson Blvd., Chicago 4* •

Cable Splices

. . . get injection protection

A method of protecting and insulating electrical splices uses epoxy resin injected into a mold tailor-made in the field. The Scotchcast resin pressure splice method is applicable to both buried and aerial cable. Lead, rubber and plastic sheathed cable or even combinations of these as well as shielded cable can be spliced.

An open mesh screen-like tape is used as a spacer material, wrapped around the splice. This open screening is covered with a liquid- impervious plastic tape holding an injection fitting to allow entry of the resin into the splice. The plastic tape, in turn, is covered with a low stretch tape to restrict expansion when resin is forced into the splice.

The adaptability of the method allows the mold to be tailor-made for each splice, providing moisture-proof, void-free, high dielectric strength insulation around nearly any size or shape of splice. It is said to make uniform quality splices possible in less time than previous methods and to minimize human error.

Resin for impregnating the splice

is supplied in a plastic envelope which holds resin on one side of a dividing membrane and a hardener, or activator, on the other. When the divider is broken, the resin and activator are mixed by squeezing the ends of the container, forming a resin which sets up or cures through internal heat. Spacer tape between the wire joint and an outer wrapping provides space into which the epoxy resin is forced through an injection fitting by means of a pressure gun. *Minnesota Mining & Manufacturing Co., Dept. RA, St. Paul, Minn.* •

Aluminum Grating

. . . is easily cleaned

A new versatile rectangular riveted type aluminum grating is especially designed to retain the combined advantages of a rectangular opening and riveted gratings. The manufacturer claims the grating is easily cleaned and offers greater durability under severe load condition. *Klemp Metal Grating Corporation, Dept. RA, 6608 S. Melvina ave., Chicago 38* •

"You Mean Bird Self-Sealing Tie Pads Can Reduce My Cross Tie Costs 59%?"

Oh baby! That's a *real* saving. And it's as easy as ABC to prove for yourself:

A. The average installed cost of a new main line cross tie, including cost of original tie plus labor, is approximately $7.00*. With a normal life of 20 years, this amounts to 35¢ per year.

B. By sealing out destructive moisture and abrasive materials from under-plate and spike-hole areas, Bird Self-Sealing Tie Pads increase the life of the average tie by at least 15 years. At 35¢ per year, this saving amounts to $5.25.

C. The cost of obtaining this saving? About $1.12 for two five-ply 7¾" x 13" Bird Self-Sealing Tie Pads. *Net saving is $4.13 — or 59% of the installed cost of the original tie.*

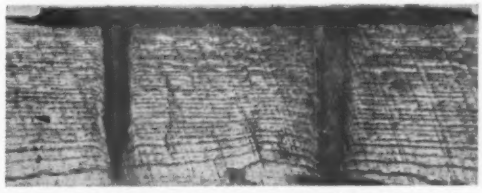
Bird Self-Sealing Tie Pads are the *only* tie pads which have *proved* their durable and effective seal with the tie through years of in-track service. Want the whole story? Write to Bird Tie Pads, Department HRA, East Walpole, Massachusetts.

*These figures represent the most conservative minimum. If your costs are higher, savings are proportionately higher.

Bird Self-Sealing Tie Pads Are Recommended For:

Bridge Decks • Curves • Switch Timbers • Highway Grade Crossings and Other Paved Areas • Crossing Frogs • Insulating Joints • With Smaller Tie Plates • Pile Cutoffs • Through Station Platforms • Out-of-Face Installations in Rail-Laying Programs • Locations where tie life is short or replacement costs are high.

Buy the Best... BIRD & SON inc. Established 1795 *Buy BIRD*



Unretouched photograph of cross section of tie shows under-plate and spike-hole area after 10 years' protection by Bird Self-Sealing Tie Pads. Destructive moisture and abrasive materials could not penetrate the seal.

LEIG

APRIL 6, 1872

NEW INVENTION MAKES EVERY MAN A TELEGRAPHER

NEW YORK, April 6—A simple telegraph instrument which automatically prints the dispatch being sent or received has been designed by Messrs. Foote and Randall of New York.

The advantages of a telegraph transmitting apparatus which can be operated by any person of average intelligence, after a few minutes instruction, is sufficiently obvious without further comment. Every man can thus be his own telegraph operator, and railroad conductors, locomotive-runners, clerks or office boys can quickly become expert in the use of the instrument.

In the transmitting apparatus as in the receiving apparatus, a train of wheels, is employe

Even back in the days when the printing telegraph was news, Graybar was active in railroad communications. From 1869 to date, Graybar has always kept its stocks and services in tune with the newest developments in railroad communications. Wires and cables... to carrier telephone and telegraph equipment... sound systems of all types, each item in the long list of modern railroad requirements can be supplied through 120 conveniently located Graybar offices and warehouses.

To save paper work, to save time, and to get the experienced assistance of railroad electrical equipment specialists, make your next order read "Via Graybar". Graybar Electric Company, Executive Offices: Graybar Building, 420 Lexington Avenue, New York 17, N.Y.

841-20

100,000 electrical items are distributed throughout the nation...

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OFFICES AND WAREHOUSES IN OVER 120 PRINCIPAL CITIES

ICC Issues Report

(Continued from page 16)

The fireman also testified that immediately before the front end of the locomotive passed the signal, its aspect changed to proceed. Meanwhile, the forestalling whistle did not sound, and the engineman commented on that. The fireman answered that the reason was the change in the signal's aspect to proceed. The engineman was also reported to have thought the signal's aspect had changed, and to have released the brakes to increase the speed of his train.

The commission's determination was that signal 672E's aspect did not change from its proceed-preparing-to-stop-at-next-signal aspect, and that signal 662E thus indicated Stop when it was passed by No. 74. As to the latter, however, the report had this to say: "The sun was low in the sky (the accident occurred at 4:29 p.m.), and because of the rays of the sun on the face of signal 662E the employees on the locomotive could not determine the indication of the signal at a distance."

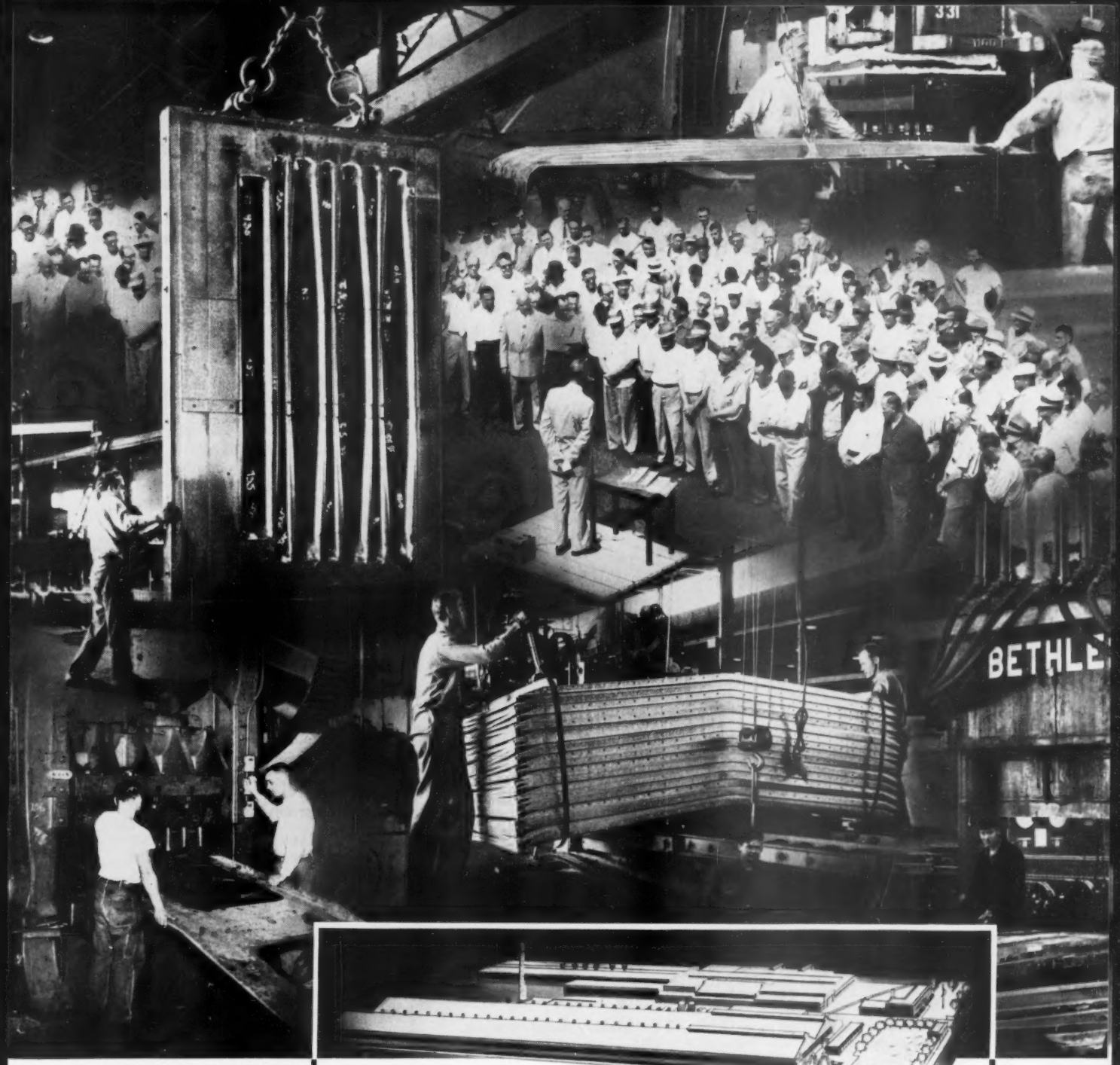
It was only when they saw the freight train about one-half mile ahead of them that the engineman made an emergency application of the brakes. After this occurred, the fireman said he did not notice the indication of signal 662E. The emergency brake application reduced the speed of the passenger train to about 28 mph when the collision occurred. The freight train was moving through the crossover at 50 mph.

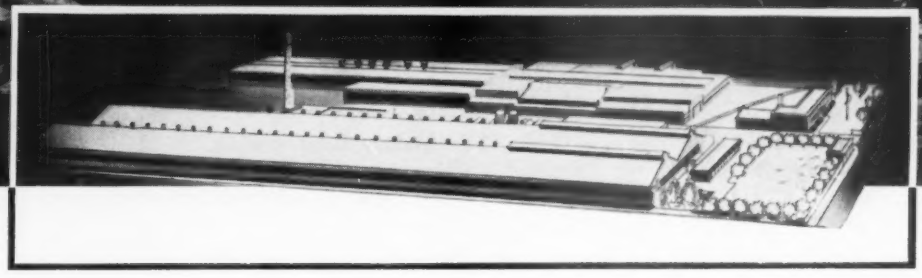
The defective inductor was located at signal 672E, and its defect was found to be such that the automatic train-stop apparatus on a locomotive passing it would not be actuated. "The condition of an inductor has no effect on the operation of the signal system," the commission noted, adding that "with the exception of the defective inductor no condition was found which would have caused an improper operation of the automatic train-stop system."

No. 74's recording tape indicated that the system had been actuated and a brake application forestalled by the engineman at a point about 15½ miles west of signal 672E, and by signal 662E's stop aspect. But it was not actuated when the locomotive passed 672E, the commission reported. As to the fireman's impressions, the commission had this to say:

"Apparently the fireman of No. 74 was mistaken as to the indication of signal 672E, and the fact that the forestalling whistle did not sound as the locomotive passed the defective inductor undoubtedly confirmed his

(Continued on page 50)





This is the last in a series of advertisements about the people of Standard.

This is **STANDARD'S** unseen team...

Unseen only because you'll probably never meet them. But very much in evidence because of the products they build.

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low-cost end results

RESULTS TALK! So if you're after genuine savings in diesel cleaning check the *results* Oakite delivers.

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Booklet F-8055 describes the many specialized Oakite materials and methods that guarantee economical railroad maintenance cleaning. Send for your copy to Oakite Products, Inc., 46 Rector Street, New York 6, New York.

OAKITE

SCIENCE

gives you the important advantage . . .

LOW-COST END RESULTS

Export Division
Cable Address: Oakite

RAILROAD DIVISION

(Continued from page 48)

impression that the indication of the signal had changed to proceed."

The defective inductor was dismantled for inspection, its coil unwound. Separations were found between turns in the windings, and there were rust stains resulting from moisture which had seeped through the windings. This, the commission said, caused the insulation to deteriorate "to the point where a sufficient number of turns of the windings were short-circuited to result in failure of the train-stop apparatus on a locomotive to be actuated regardless of the indication of the signal."

Central records showed that the inductor was given a "complete electrical test" prior to its installation at signal 672E on October 17, 1956. On November 12, 1956, during the semiannual tests of all inductors in this territory, no defective condition in this inductor was recorded by the instruments of the automatic train-stop test car as it passed signal 672E.

There was evidence that No. 74's engineman thought that heavier-than-usual brake applications had been required to stop his train during earlier stages of its run. As to that, the commission said "no condition was found which would adversely affect the operation of the brakes."

Firm Programing

(Continued from page 32)

Is it practicable to chart maintenance programs several years in advance? From a purely maintenance standpoint this is highly desirable, says Mr. Hiltz.

"Practically," he adds, "the income tax consideration is so strong for certain companies that year-to-year variations in maintenance programs are unavoidable if a proper financial course is charted. If properly administered, however, the undesirable effect of these year-to-year variations can be minimized. If the long-range objective is kept in mind, maintenance costs, efficiency or effectiveness need not be impaired.

"In other words, just because the income tax 'cycle' is based on a one-year period is no reason why this maintenance 'cycle' should be tied down to the same period. The danger, of course, is that tax savings made in one year are quickly forgotten insofar as maintenance is concerned with the result that the long-range cycle is not maintained or is made too 'long range.' "

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BRIDGE CONSTRUCTION

Tenders are invited by the Sault Ste. Marie Bridge Company for the construction of a 370 foot railroad lift bridge over the South Ship Canal at Sault Ste. Marie, Michigan. Tenders must be delivered to the office of the Chief Engineer of the Soo Line Railroad, Minneapolis, Minnesota not later than 10 A.M., May 9th.

Plans and specifications are on file for inspection at the Soo Line Office in Minneapolis and the Corps of Engineers Offices in Detroit and Sault Ste. Marie. Copies of plans and specifications will be furnished at a fee of $23.00.

POSITION OPEN

Well established railway supply company in mid-west has opening for Mechanical Engineer 35-40 with experience in freight car design and departmental supervision. Submit resume including age, experience, and salary requirements. Address Box 45, RAILWAY AGE, 79 West Monroe Street, Chicago 3, Illinois.

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When Is a Car Effectively 'Utilized'?

With freight car supply as much a problem as it has been in recent years—it's no wonder that there has developed a lot of study and exhortation on the subject of car utilization. But there is, as always, a side to such questions that may be overlooked. In a recent address to the Railway Systems & Procedures Association (Railway Age, April 8, p. 9) President David Smucker of the DT&I insisted that there is a great deal of what he calls "statistifying" about car utilization. By this term he means such figures as those which show that a freight car moves only a couple of hours a day under load. He went on to say:

100 Per Cent "Utilization"

"One way to test any kind of theory is simply to pursue it to its logical extreme and then see whether it still seems reasonable. Let's see what we would have to do to achieve 100 per cent use of a freight car in loaded movement. At the exact minute a new car was delivered, an engine would immediately have to shove it onto some shipper's siding and get it loaded. The engine would then have to run directly to the destination point, avoiding all yards and terminals, and not wait for any other cars. Upon arrival at destination, the car would have to be placed immediately and the consignee would have to have a force of men waiting to unload the freight, and to reload the car instantly with something else, so that there would be no need to move the car even a mile empty.

"We wouldn't need nearly as many cars as we do now and we wouldn't require any classification yards. But we would have to have an engine for every freight car and, of course, a great many times as many main tracks and passing tracks as are now required. We would multiply both our operating expenses and our investment to such a point that the railroads' natural inherent economic advantages would completely disappear."

It is Mr. Smucker's thought that maximizing car movement under load, while important, does not constitute the whole of economical railroad operation, nor of satisfactory service to customers. Maximum daily movement of loaded cars is a praiseworthy objective but only to the extent that its pursuit does not entail the sacrifice of other goals which may be even more important to overall profitable performance. He said:

> **"We won't re-establish controls by wallowing around in a welter of 'average' statistics which have one thing in common with a Bikini bathing suit—no matter how much may be revealed, they are really designed to conceal what is vital."**

The shipper has his competitive problems too. He has to consider the relative costs to him of the various alternative forms of transportation. And the shipper

THIS RELATES TO:

1—Challenging competition
2—Holding to high service standards
3—Increasing internal strength
4—Getting a higher level of earnings
● 5—Improving tools and methods
6—Seeking a friendlier environment

takes into account *all his elements of cost*—not merely the charge for movement from A to B. Some of these other costs include those of assembling and warehousing a carload of his products; and of bracing his freight in a car so it will not be damaged in transit.

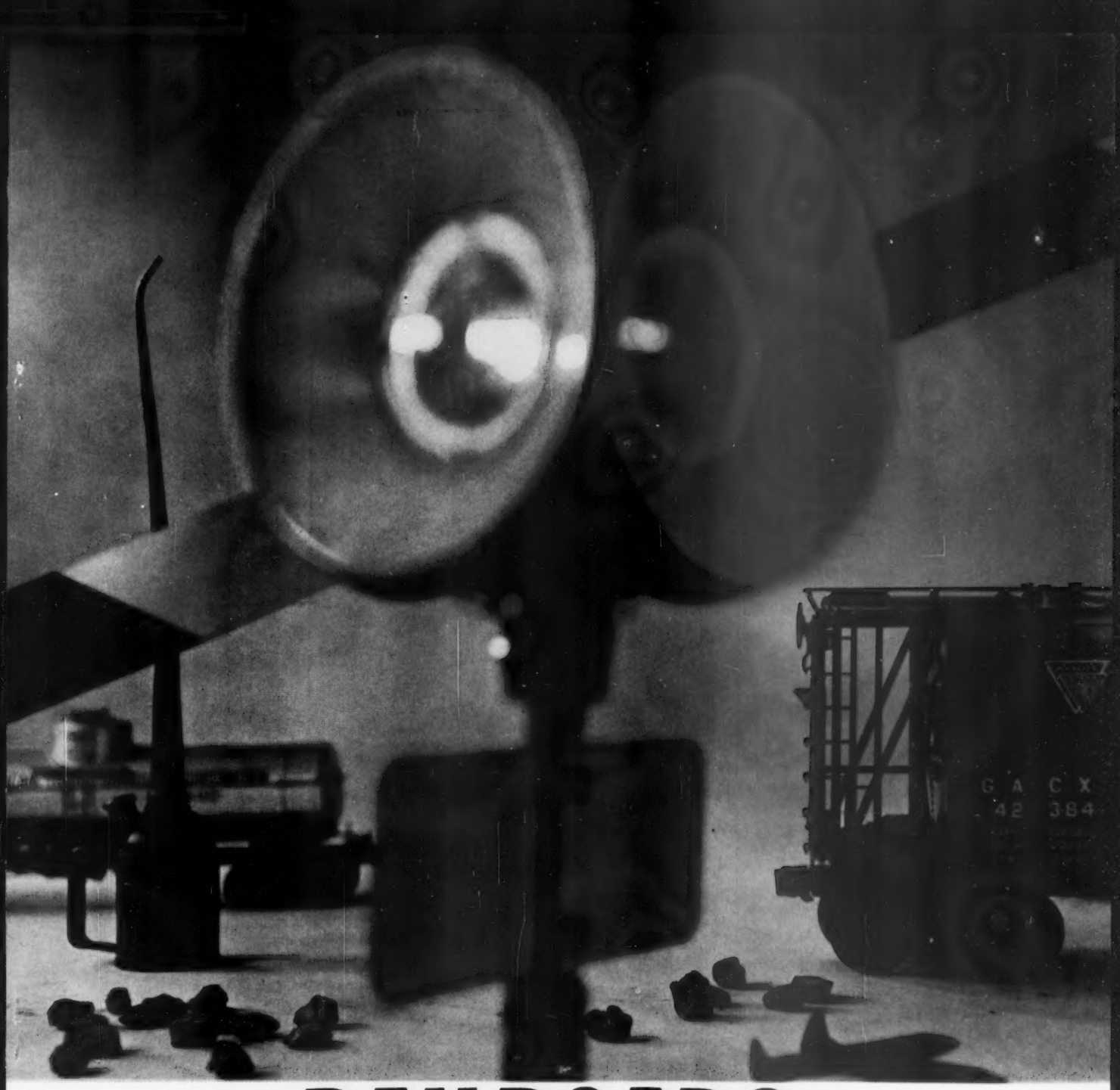
"As an example of what I am talking about let's consider thin-rolled steel products. Some energetic fellow came along with a flat bed trailer, a tarpaulin and a couple of log chains. This operation grew in a very short time into a whole host of successful trucking companies, which practically took the railroads out of the thin-rolled steel products business.

"How did railroad management react to this challenge? They undertook to reduce the total overall cost of railroad operation in two ways—first they proposed a dual system of rates on steel products, one applicable to carloads of 40,000 lb, and another, and somewhat lower, scale of rates on carloads of 80,000 lb or more.

"The second way in which the railroads came to grips with this competition was to engineer and develop a way to overcome the condition which forced the shipper to spend several hundred dollars to block heavy bundles and rolls of steel to prevent their being unloaded en route from switching impact or slack closures. The railroads developed a relatively simple system of floating skids, so that the shipper just lowers his shipment into the car, positions the cross members to restrain movement relative to the skid, and then protects his shipment from the weather with railroad owned, reusable, light metal hoods."

Empty Mileage Could Help Profits

This development did not increase the ratio of loaded to total car-miles, but it has helped to put traffic back on the railroads by offering to the shipper a service he was willing to purchase. And the objective of increased earnings for the railroads was probably better served, at least in this instance, by some sacrifice in the ratio of loaded to total car-miles. Thus it is possible that a car may be better "utilized," from the profit standpoint, when it moves 50 per cent empty, than if 100 per cent loaded movement is insisted upon.



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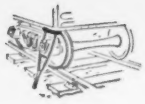
"A CURE IS BETTER THAN  *A CRUTCH"*

Crutches don't cure the Hot Box problem . . . but Timken® bearings do

. . . and TIMKEN bearings pay for themselves over and over and over in operating and maintenance savings

GIVING friction bearings "crutches" —devices attempting to improve performance—never cures the hot box problem. But Timken® bearings *cure* it, because they eliminate the *cause* of hot boxes—the friction bearing itself.

HOW SAVINGS MOUNT

Timken bearings eliminate the frequent inspection and lubrication that are necessary to keep friction bearings operating even with "crutches". Terminal bearing inspection is cut 90%. Lubricant costs are slashed as much as 95%. Fact is, the new Timken heavy-duty type AP (All Purpose) bearing assembly can go three years without the addition of lubricant. Costs less to use and to install too. When all railroads go "Roller Freight", they'll save an estimated $224 million a year, earn about a 22% net annual return on the investment.

THE TAPER HOLDS THE "SECRET"

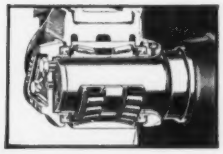
The reason Timken bearings eliminate the hot box problem is—they *roll* the load. They don't slide it as friction bearings do. There's no metal-to-metal sliding friction. And the reason Timken bearings are the only journal bearings you can count on to cure the hot box problem *and* cut costs to the bone is—their tapered roller design. It prevents lateral movement. There's no scuffing or skewing, bearings last longer. There's no pumping action, so less lubricant is required.

We even make our own bearing steel to assure Timken bearing quality. We take this extra step to be sure it's the finest, toughest steel available. No other American bearing maker does.

Compared to the cost of buying and maintaining "crutch" devices that never cure, the difference in price between friction bearings and roller bearings is smaller today than ever. Costs can be reduced even more, as shown by a practical conversion plan

CONVERTING THE PRACTICAL WAY

one major American railroad has adopted. Whenever a freight car of this railroad comes into its shops for major repairs, it is converted to roller bearings. This plan helps maintain a steady shop and labor schedule, reduces bearing installation cost.

There's no longer any need to try and "get by" with costly "crutches". They don't cure the hot box problem. But Timken bearings *do*—and give maximum savings in operating and maintenance cost. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

Only TIMKEN® bearings cure the hot box problem and cut operating and maintenance cost to a minimum